EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

Patriot 338 & 551

Patriot Series 338 & 551

OPERATIONS MANUAL

PATRIOT SERIES 338&551
HYDRODYNAMIC AUTOMATIC BAR FEEDER
PATRIOT

MANUAL FOR USE AND MAINTENANCE

REV. 5 DATE：2015/10/01 COD：BPA102032

S/H

1. General Information

2. Technical Information

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1. General Information

 **Please read and understand the Manual before operating the bar feeder**

1.1 Contents of the Manual

The bar feeder 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 and machine tool. Particularly important points of information are preceded by the following symbols and text:

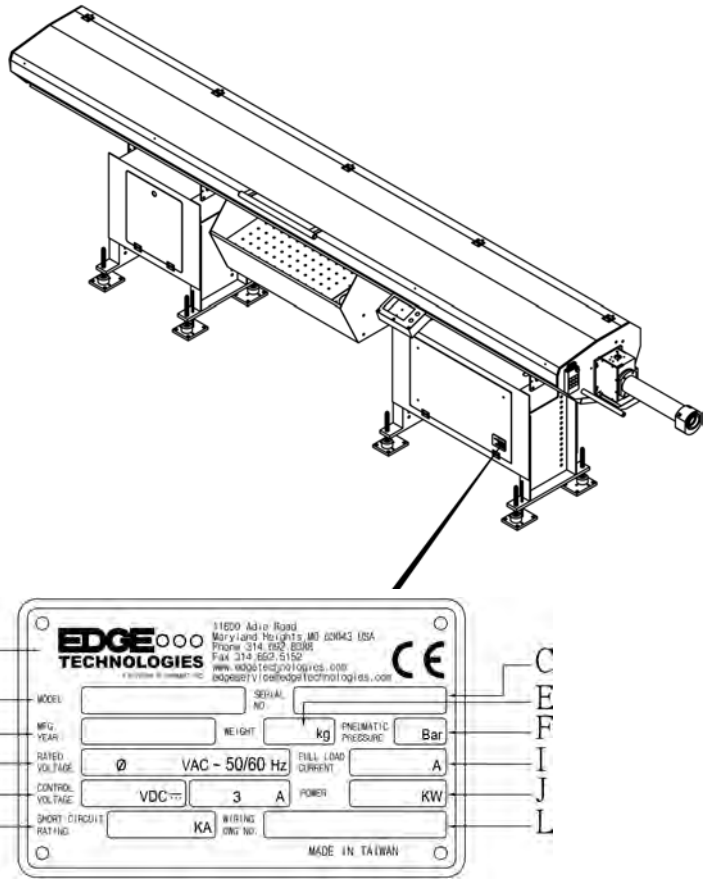
 **Warning** Indicates a potential danger to life or risk of personal injury. Exercise extreme caution.

 **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.

 **Important Information** precedes special or technical information. Additional information can be located by using the table of contents of this manual.

 **Skilled** Denotes operations that must be carried out by qualified and skilled personnel. Other operations may be performed by qualified personnel or trained operators.

1.2 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.

1.3 Technical Support

For technical support please contact the Edge Technologies Service Department by phone at 314-692-8388 of by email edgeservice@edgetechnologies.com

Important information When calling for technical support please have the machine model (type) and serial number on hand. Refer to the machine data plate for this information.

2. Technical Information

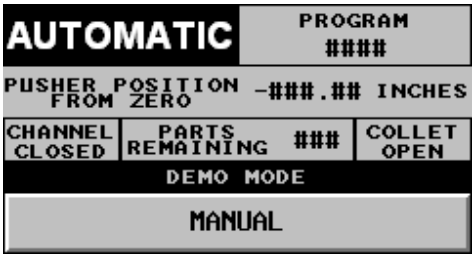
2.1 Description of the Machine

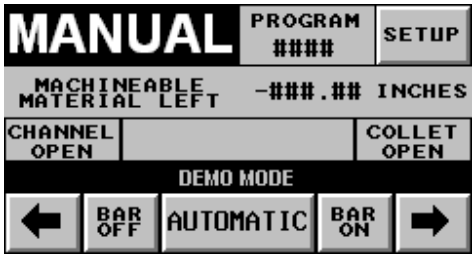
The Patriot is a PLC controlled automatic bar feeder designed for both Swiss style and fixed headstock lathes. The bar feeder is constructed to handle a wide variety of material profiles from round to hex and square stocks and can be adapted to feed materials with a more unique shape.

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.

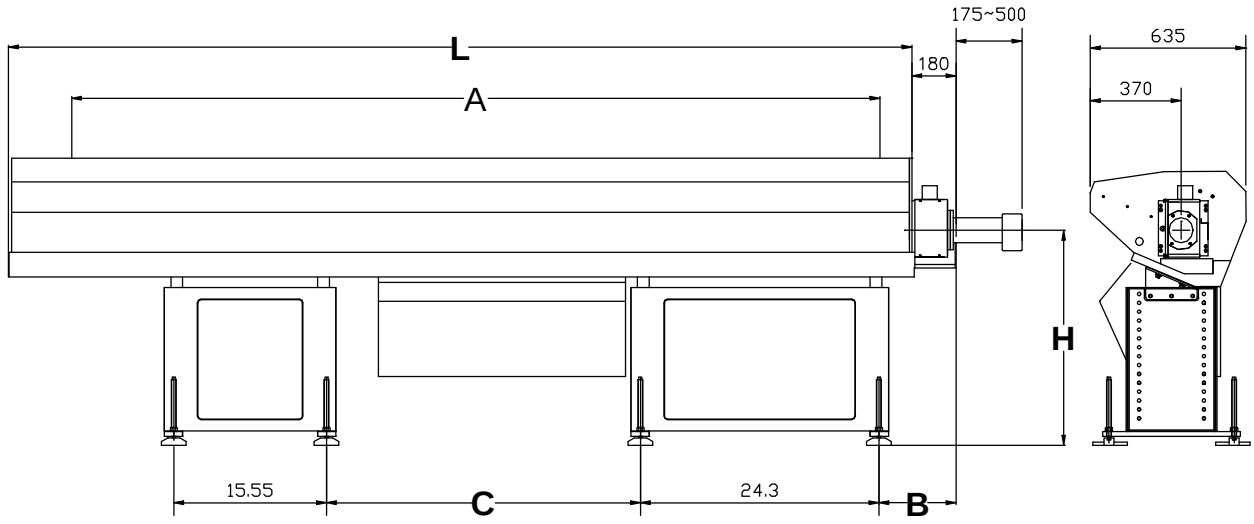
An anti-vibration device is located at the front of the bar feeder. Polyurethane bushings surround the bar, leaving a few millimeters clearance between the bar and the bushings. This void is filled with oil to help further stabilize and support the stock. For Swiss style sliding headstock lathes a moveable 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.





2.2 Machine Footprint



Model	25	32	37
L	3020	3680	4222
A (Max Bar Length)	2600	3260	3800
B	276	284	574
C	1309	1309	1559
H	850mm to 1300mm		
Weight	850kg	900kg	950kg

2.3 Capacities and Requirements

Bar Diameter Capability	5mm (.196”) to 32mm (1.260”)
Available Channel Diameters	13, 21, 26, 28, 33, 36
Magazine Capacity (12” plane)	Ø5 – 60 bars, ø32 – 9 bars
Oil Requirement	60 liters ISO CB 150
Electrical Requirement	3 phase 220VAC, 16A 50/620Hz
Air Requirement	6 Bar (85 PSI)

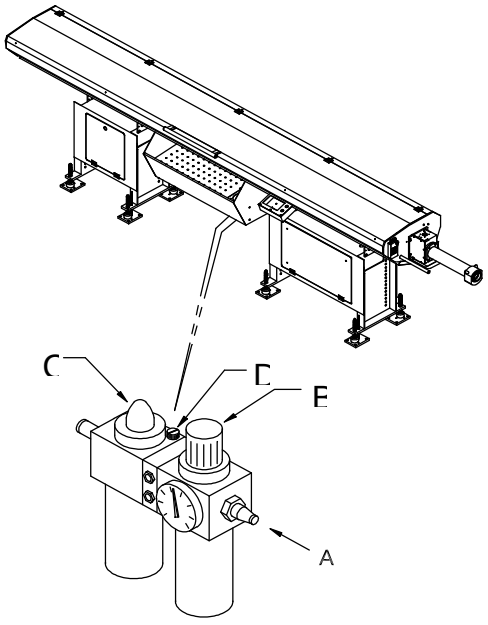
2.4 Compressed Air Supply

Air supply to the bar feeder must be supplied through a line having a minimum inside diameter of 8mm. Pressure must be maintained at a minimum of 6 bar (85 PSI) for the bar feeder to operate properly. An air pressure safety switch connected to the filter/regulator unit monitors air pressure. A fault will be displayed on the bar feeder operator panel if the air pressure falls below 6 bar. Air consumption is approximately 50L per hour.

2.4.1 Connect the air supply line to the fitting **"A"**. Pull the regulator control knob up and turn the knob to set the air pressure to 6 bar (85 PSI).

2.4.2 The filter/regulator unit supplies lubricating oil to the various pneumatic system components. The lubricator unit should be set at the factory but it may be adjusted as needed. To adjust turn knob **"C"**. The proper setting supplies 1-2 drops of oil per 1000 liters of air used. The lubricator oil level should be maintained between the high and low level marks on the container. To fill the unit, first disconnect the air supply from fitting **"A"**. Remove the filler screw **"D"** and fill the reservoir with one of the oils from the chart below or an equivalent.

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



2.5 Electrical Supply

The Patriot draws electrical voltage from the lathe through the interface cable. Standard power input is 220VAC 3 Phase, 16 Amps. The transformer in the bar feeder cabinet has multiple input voltage taps to accommodate most lathe configurations without using an additional external transformer.

2.6 Guide Channel Specifications

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.

Important Information The outer diameter of the bar collet must be at least 0.5mm smaller than the bar pusher outer diameter.

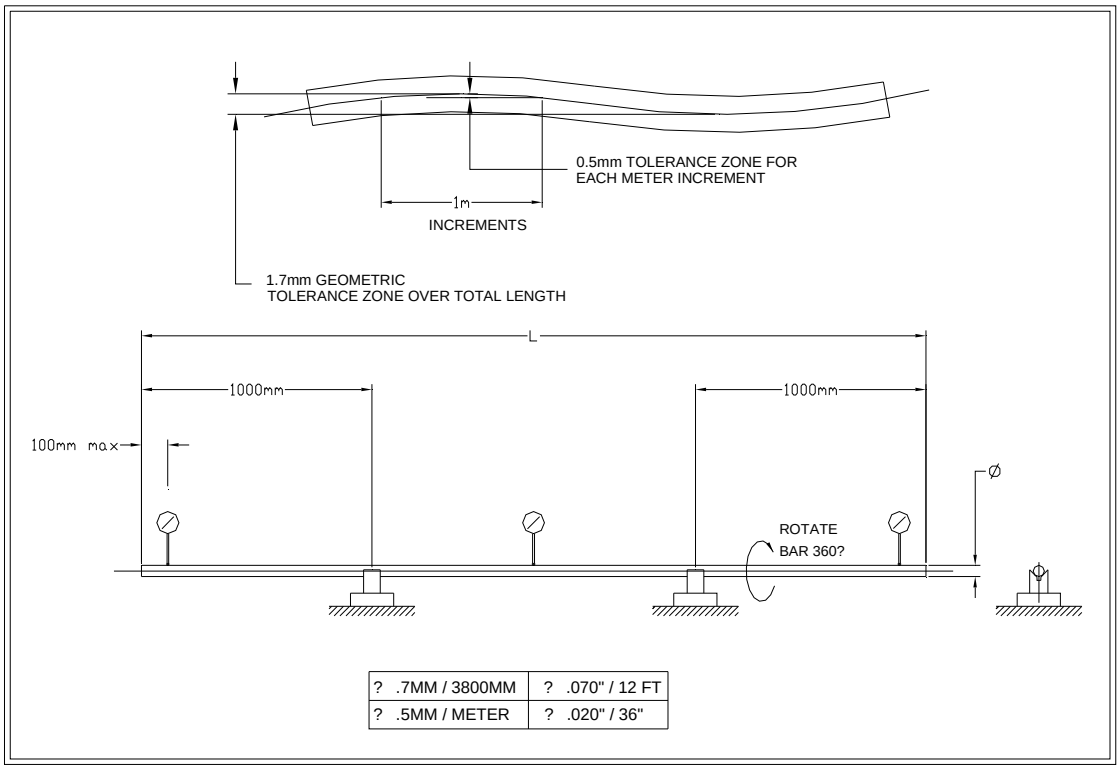
2.7 Bar Stock Preparation and Straightness Requirements

2.7.1 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.

2.7.2 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.



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

2.7.3 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.

2.7.4 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 ect.).
- 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.

3. Transportation and Handling

Warning The weight of the bar feeder without packaging is approximately 2100 lbs. Verify the equipment to be used for moving the bar feeder is rated to safely lift the weight of the bar feeder plus the packaging material. Make special note that the bar feeder is top heavy and take proper precautions.

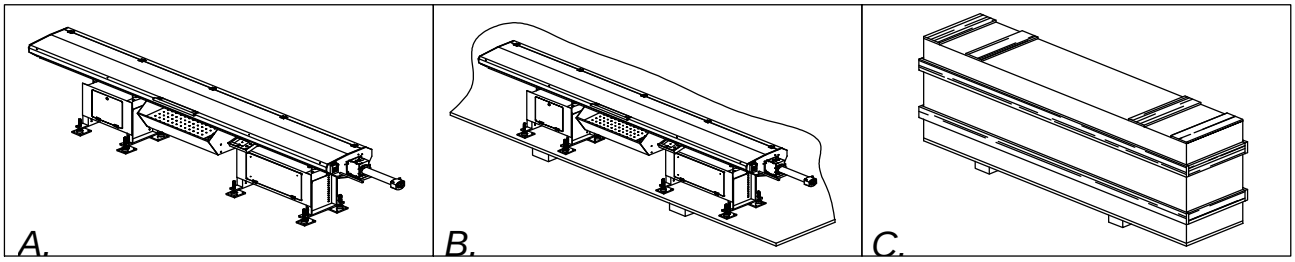
3.1 Packaging of the Bar Feeder

The bar feeder will arrive in one of three ways:

A: Without packaging.

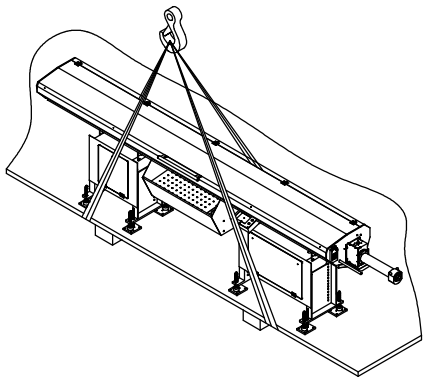
B: Attached to a skid or pallet.

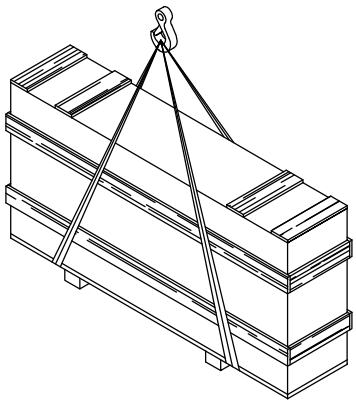
C: Crated in a wooden box.



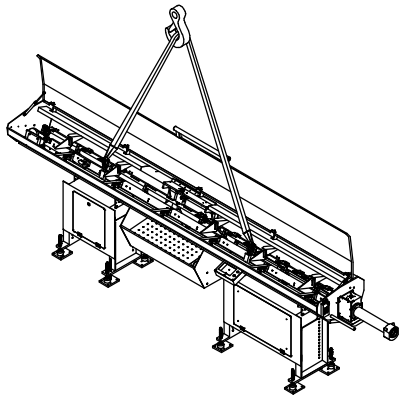
3.2 Transporting the Bar Feeder

The bar feeder will usually arrive in configuration “B”, on a skid. In configurations B and C the machine may be lifted by a fork truck having suitable capacity. The forks must be spread as far as possible, ideally under the stands of the bar feeder. Lifting straps may also be used to move machines in the B and C configurations.





Machines in configuration “A” may be lifted only by the two 25mm eyebolts found under the hood on the bar plane. These eyebolts must also be used to remove the bar feeder from the skid.

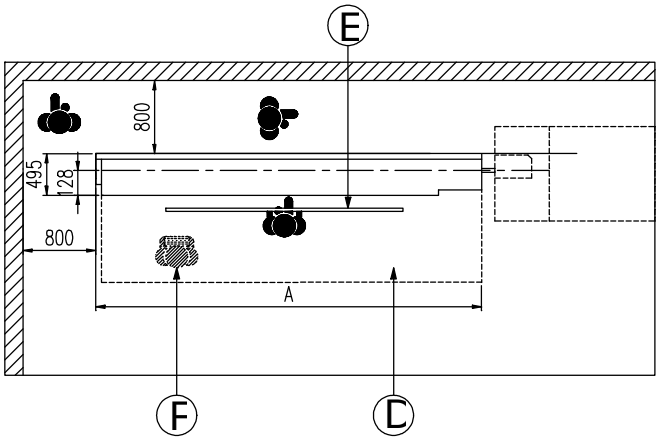


Caution Lifting the bar feeder under the magazine with a lift truck or slings may cause damage to the machine. Use the provided eyebolts with lifting straps or chains to prevent damage to the bar feeder.

3.3 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 can not be adapted to use in an explosive surrounding.

A = 4400mm
D = Operator area
E = Material supply area
F = Remnant removal area



4. Installation

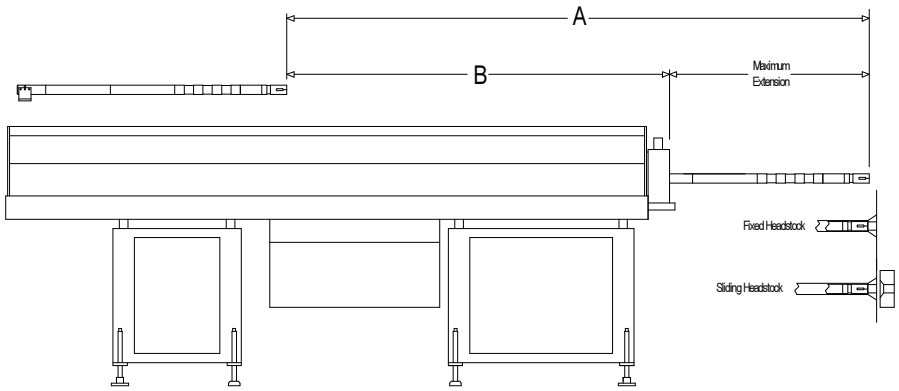
Caution The following instructions should be carried out only by skilled, trained personnel. Proper alignment and installation is crucial to achieve optimal performance of the bar feeder. Improper alignment can cause poor finish quality and out of tolerance conditions on machined parts, damage to the bar feeder channels, pusher and collet and damage to the actuator and spindle bearings on the lathe.

4.1 Lathe Preparation

Prior to beginning the bar feeder installation the lathe must be properly leveled. It is strongly recommended that the lathe be anchored to the floor to prevent it from shifting.

4.2 Distance From Lathe

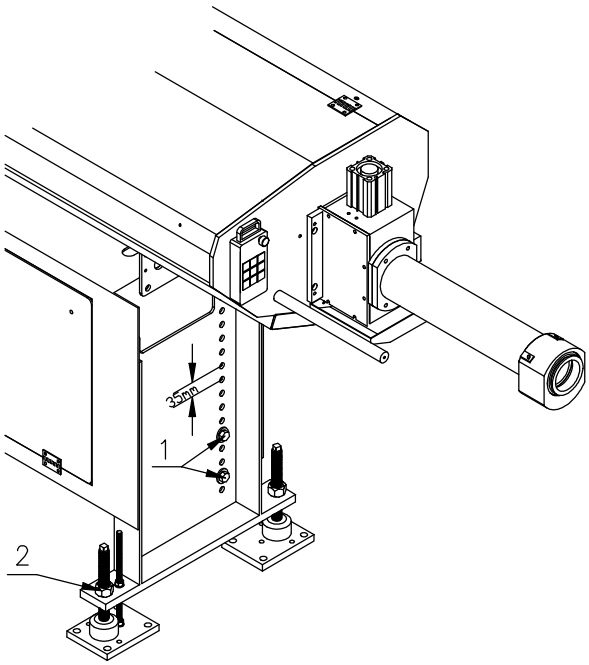
The bar feeder must be set the proper distance from the lathe. This distance is measured from the front of the anti-vibration device to the face of the lathe collet. In the case of a Swiss style lathe the measurement is taken from the face of the lathe collet when the sliding headstock is in over-travel 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.



A Dimension	B Dimension L	B Dimension LL	Max Extension L	Max Extension LL
3800	2870	2540	1120	1450

4.3 Height Adjustment

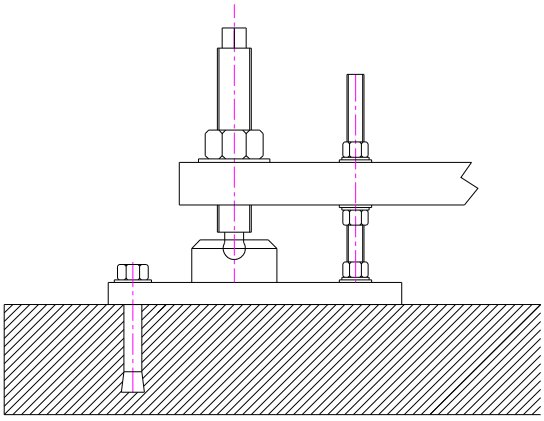
Determine the distance from the floor to the center of the spindle of the lathe. Compare this dimension to the distance from the bottom of the bar feeder stand to the center of the opening of the steady device plus 75mm. If this distance is not within 25mm ± of the lathe center height the bar feeder 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 legs 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.



4.4 Leveling

Place steel anchor plates and spacers under the four outside corners of the bar feeder. Thread the leveling bolt into the stand so the ball of the tip is in the matching socket of the spacer. Assemble the 10mm hold down rod as shown below, nut – lock washer – flat washer. Be careful not to extend the rod past the bottom of the anchor plate. Tighten the nut at the anchor plate. Do not tighten the nuts on the top and bottom of the stand at this time. Leave sufficient clearance to allow for height adjustment and leveling. Place a machine level on the leveling bracket. Level the bar feeder side to side at the front stand. Move to the rear stand and level from side to side, then adjust for level front to rear. The front to rear level is only a coarse adjustment at this time. Raise or lower the bar feeder to match the lathe center height while

maintaining the side to side level while performing this step. Once the center height is roughly the same as that of the lathe you are ready to align the bar feeder.



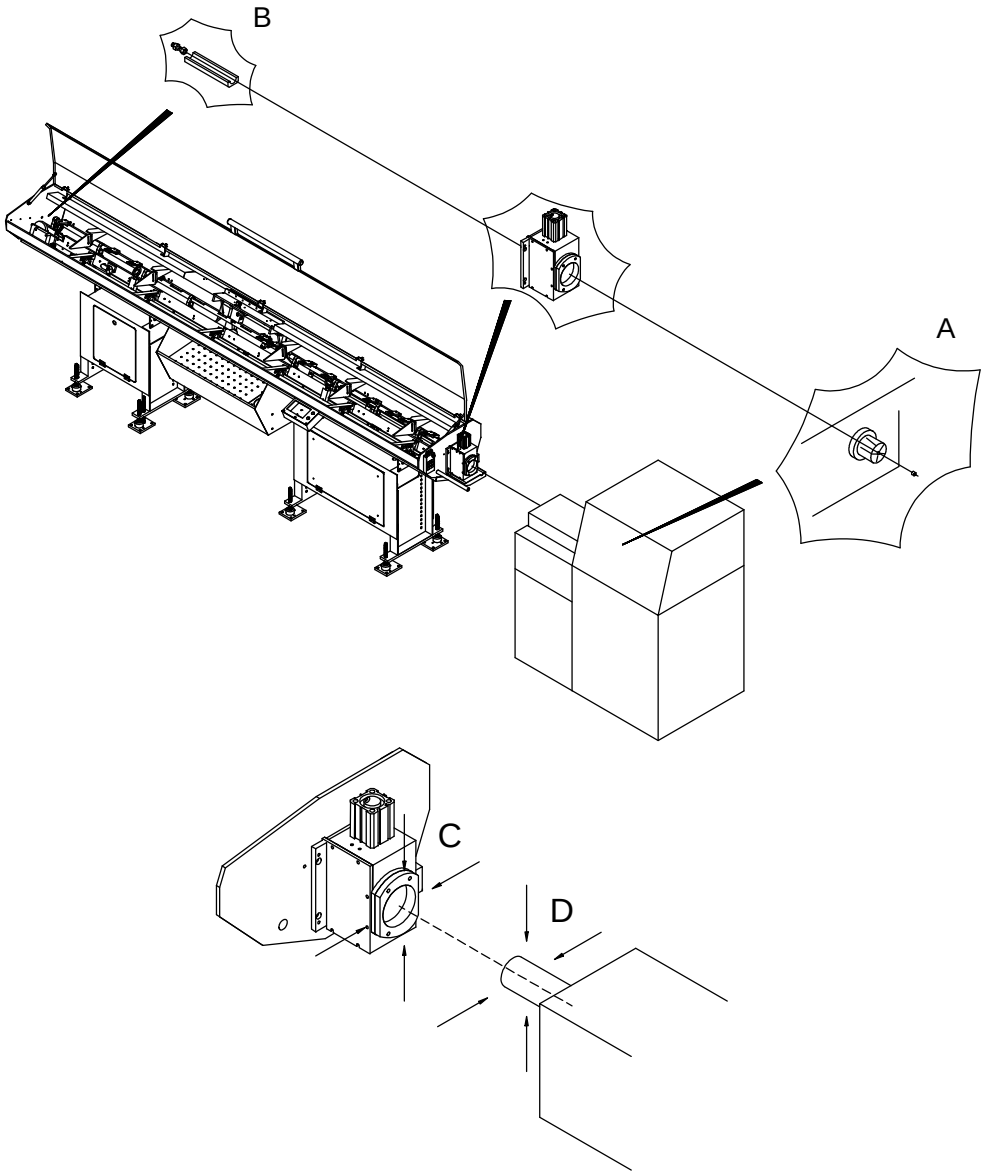
4.5 Alignment

The bar feeder is aligned to the lathe spindle by use of a nylon string which is stretched between the lathe collet/chuck and the alignment fitting at the rear plate of the bar feeder. This string indicates the centerline of the two machines. The procedure is detailed in the following steps.

4.5.1 Prepare the bar feeder

The bar feeder should be at the proper distance from the lathe, leveled from side to side and adjusted to the approximate center height of the lathe as detailed in steps 4.2 – 4.4.

1. Open the guide channel and remove the bar pusher and pre-feed pusher.
2. Insert the nylon string through the hole in the supplied stepped plug and insert the plug into the lathe collet.
3. Pull the string through the lathe spindle and the bar feeder and through the hole in the alignment fitting in the rear plate of the bar feeder. Stretch the string as tightly as possible and secure it to prevent slippage that would loosen the string.



4.5.2 Aligning the center lines

The bar feeder is aligned by moving the front and rear stands so that the distance from the string to the centerline of the lathe spindle and the centerline of the opening of the anti-vibration device is equal on all sides to within 0.15mm (approx. .005 inch).

1. Beginning with the rear stand, adjust the elevation by using the leveling screws so the rear of the spindle is centered over the string between the 6 and 12 o'clock positions. A piece of magnetic stock, such as that used in flat advertising magnets, attached to the spindle face and positioned closely to the string will allow the spindle to be rotated 180 degrees to check the position relative to the spindle bore. Once the string is centered to the spindle, move to the front stands and repeat the procedure. To check the centering for the front of the bar

feeder check the position of the string relative to the bore of the anti-vibration device. It may be necessary to alternate between the front and rear adjustments until both are centered. When centered, tighten the jam nuts on the leveling screws.

2. Starting with the rear stand align the bar feeder to the lathe spindle from side to by using a pry bar to shift the feeder. Small adjustments in position may be made by striking the anchor plate with a soft faced hammer. When the string is centered to the spindle move to the front stand and repeat the procedure, aligning the string to the bore of the anti-vibration device. As with the elevation adjustment it may be necessary to alternate between the front and rear adjustments until both are centered.

Important Information The bar feeder must be properly affixed to the floor to be able to maintain alignment to the lathe. Bar feeders not anchored to the floor are subject to damage to bar pushers, collets, anti-vibration blocks and guide channels as well as possible damage to the machine tool.

4.5.3 Anchoring the bar feeder

The bar feeder is secured to the floor through hold down rods attached to the four leveling plates which are bolted to the floor with concrete anchors. Please refer to the drawing in section 4.4. The anchor plates have 4 through holes for securing the plate to the floor. Only three holes are used per plate.

1. Drill one hole through each of the four anchor plates using a rotary percussion hammer drill equipped with a ½ inch diameter bit capable of drilling at least 8 inches deep, preferably capable of drilling completely through the concrete. Drilling through the concrete will make driving the anchors below flush possible if the machine is to be relocated.
2. Drive an anchor bolt into each hole and tighten securely. Recheck the alignment to verify that the feeder has not shifted (a small amount of shift is normal and may be corrected later in the procedure).
3. Drill the remaining 2 holes per plate, insert and tighten the anchor bolts as above.
4. Tighten the top nut on each hold down rod.
5. Recheck the alignment. If the feeder has shifted loosen the hold down nut and adjust the leveling screw as required. Once the alignment is verified tighten the middle

hold down nut against the bottom of the bar feeder stand on all four hold down rods.

6. Place a plastic pad under each of the four inside leveling screws. Tighten the leveling screws firmly by hand making sure the ball of the leveling screw is fully in the socket of the pad. Using a wrench, tighten each leveling screw an additional ½ turn and tighten the jam nut.

4.6 Installation of accessories

4.6.1 Movable anti-vibration device

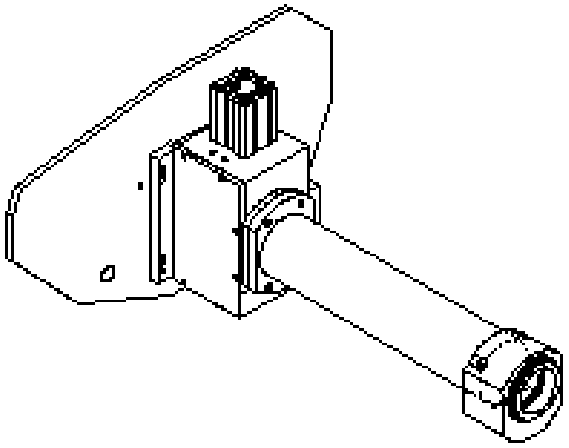
The anti-vibration device (MAVD) is mounted at the end of the lathe spindle with the supplied mounting hardware.

The MAVD is pre-aligned and assembled at the factory according to lathe model. The lathe adapter plate (A), rollers (B), and nose plate (C) are aligned along line (D) to ensure the rollers hold the bar stock on center to the spindle. Due the many different lathe designs the lathe adapters to connect the MAVD to the lathe may not allow for an exact fit. This will require the installer to align the MAVD on center to the lathe spindle with the alignment string. Install the string in the same manner as described in section 4.5.2 after the MAVD is attached to the lathe. Align the adapter plate (A) using a scale or alignment tool. Do not alter the alignment of the rollers and nose plate to the adapter plate as they are pre-aligned.

4.6.2 Fixed front nose

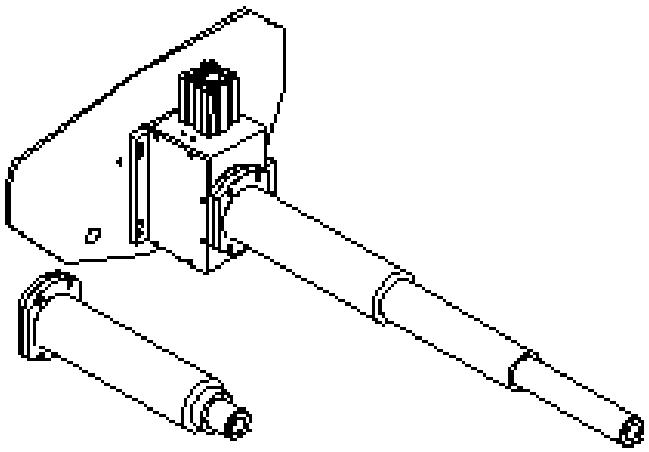
For installations with fixed headstock lathes a fixed nose is supplied to fill the distance between the bushing device and the back of the lathe spindle or coolant collector. The flange of the fixed nose bolts to the face of the bushing device. A liner sleeve to match the diameter of the guide channel is fitted into the nose. A coolant collector attaches to the end of the fixed nose to catch excess oil from the bar feeder.

The nose should be cut to a length approximately 25mm less than the distance between the face of the bushing device and the lathe coolant collector. This space is to allow the oil to drain into the bar feeder coolant collector.



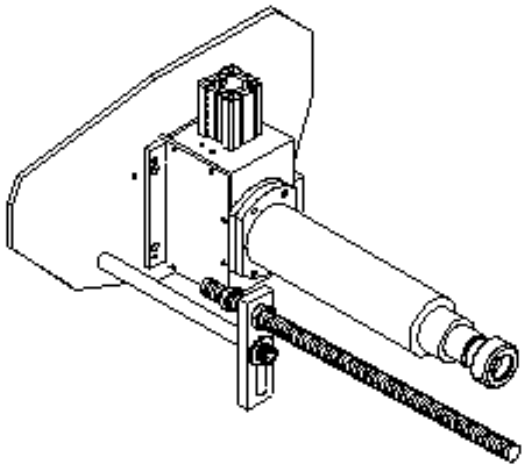
4.6.3 Telescoping front nose

For installations with sliding headstock lathes a telescoping nose is supplied to fill the distance between the bushing device and the moveable anti-vibration device. The nose extends and collapses with the movement of the headstock to keep the material contained and provide support for the bar pusher.



4.6.4 Synchronization device

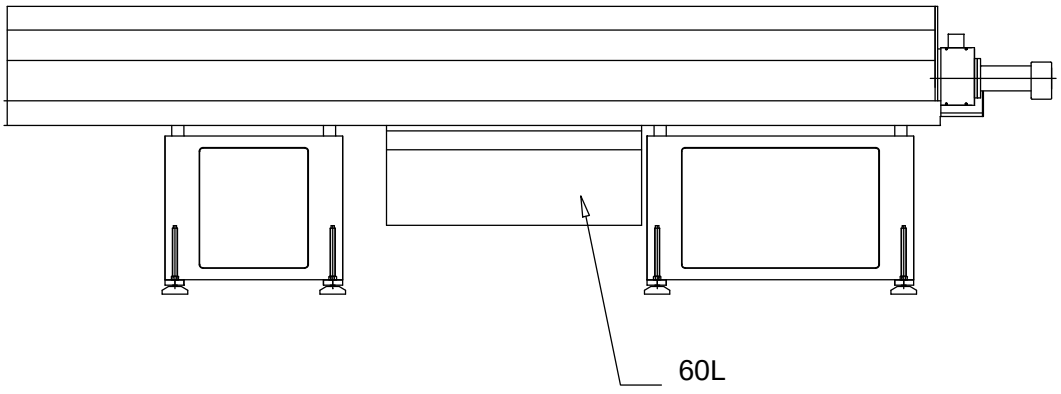
For installations on sliding headstock lathes a synchronization device may be used. A rod is linked to the moveable anti-vibration device mounted to the lathe spindle. This rod passes through the front plate of the bar feeder. Inside the bar feeder a piston assembly is attached to the rod. A timing belt 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 belt. 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.



4.7 Oil for guide channel lubrication and dampening

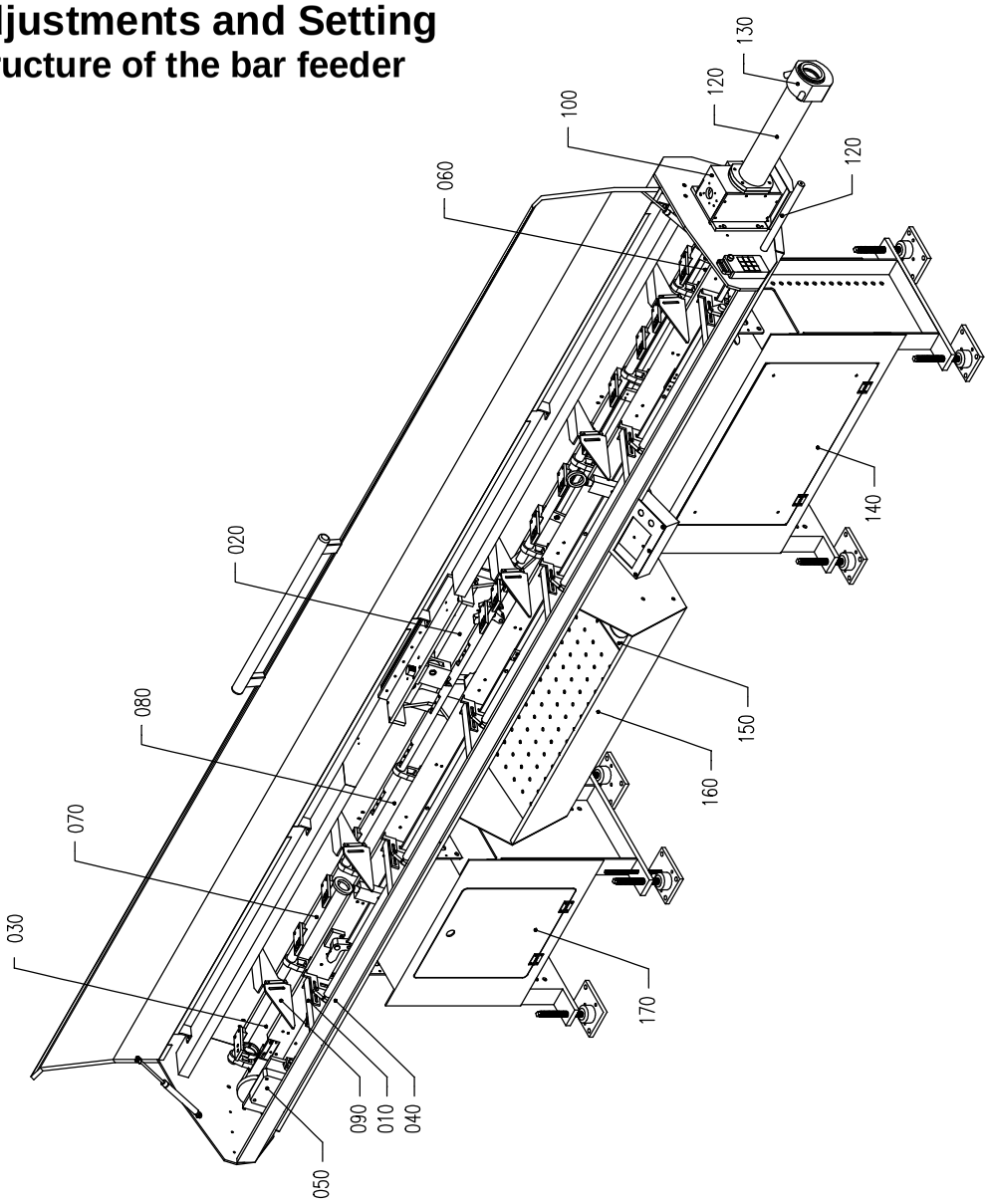
The bar feeder pumps oil into the guide channel for dampening vibration and lubrication of the revolving tip of the pusher. The oil tank should be filled with 60 liters (approx.16 gallons) of ISO 100 oil of the type listed in the cross reference below. The oil used must not be chlorinated or sulfured as these materials will damage the guide channels.

BP	Energol CS 100
Castrol	Magna 100
Chevron	Circulating Oil 100
Esso	Nuto 100 Nuray 100
Gulf	Security 100
McMaster Carr	3025K45 2158K37
Mobil	Vactra Oil Extra Heavy DTE Oil Extra Heavy
Shell	Vitrea 100 Tellus C 100
Texaco	Omnis 100 Industrial Oil 100



5. Adjustments and Setting

5.1 Structure of the bar feeder



010	Frame
020	Gripper
030	Loading/Unloading Control
040	Bases and Beam
050	Feed Motor Drive
060	Cutting Device
070	Guide Channel
080	Bar Pusher
090	Support
100	First Anti-Vibration Device
110	Synchronization Device
120	Telescoping / Fixed Nose
130	Oil Collector
140	Electrical Cabinet
150	Oil Pump
160	Oil Tank
170	Tool Box

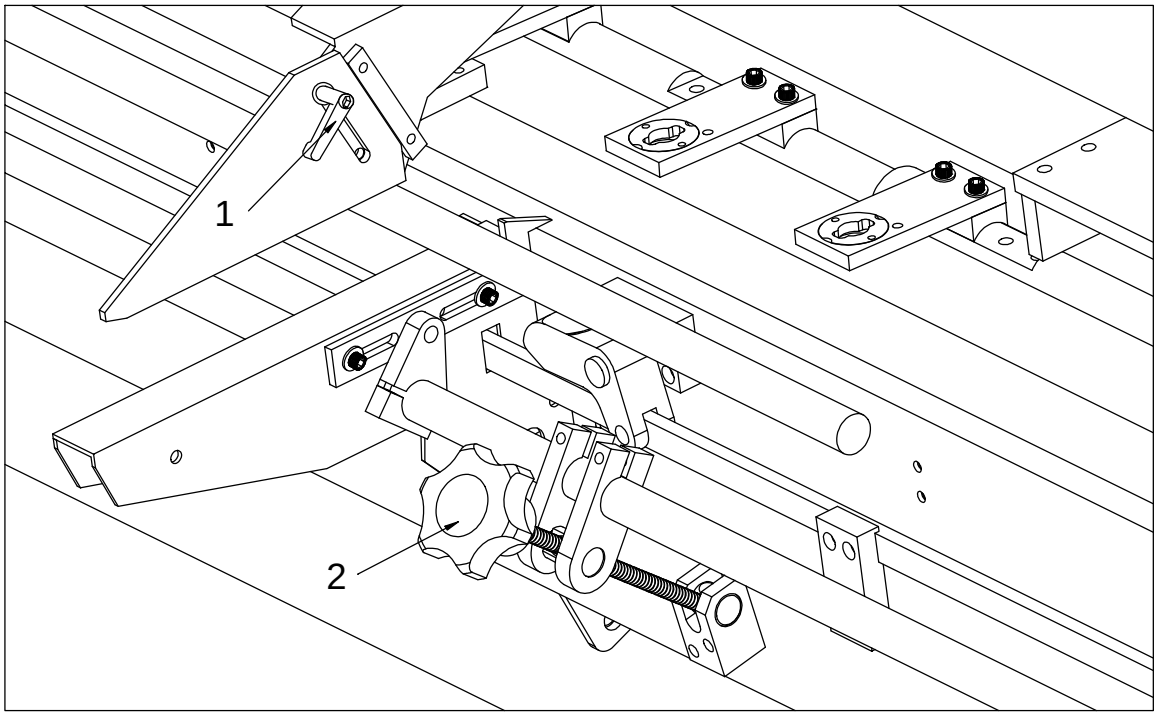
5.2 Adjustment of the loading device

5.2.1 Loosen the locking lever for the support plate (1) and lift the plate to the highest position. Tighten the lever (1).

5.2.2 Place one of the bars to be machined on the magazine.

5.2.3 Rotate the knob (2) to adjust the bar stop so that only the first bar on the magazine is lifted into the guide channel.

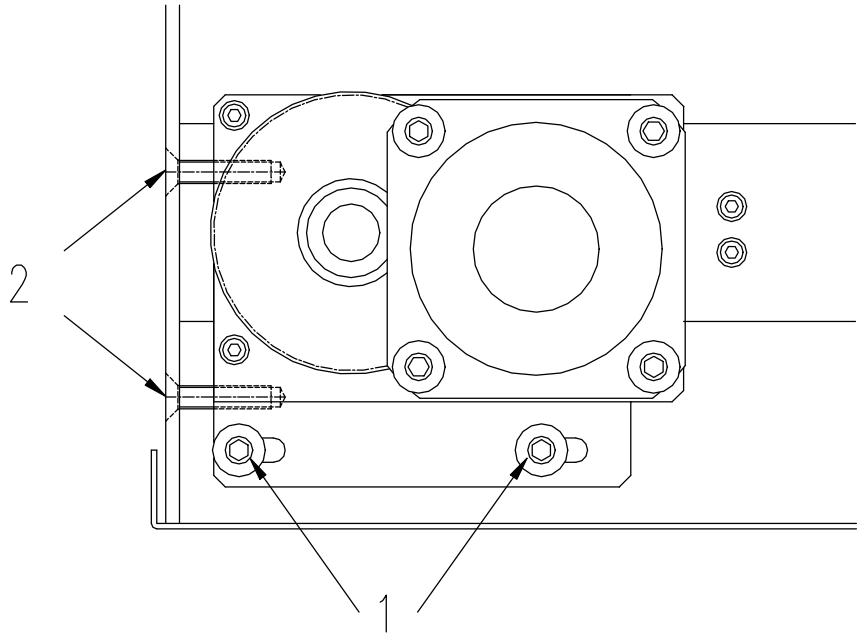
5.2.4 Loosen the lever (1) and slide the support plate down to 1mm over the bar to be machined. Tighten the lever (1).



5.3 Chain adjustment and lubrication

5.3.1 Remove the sheet metal side cover of the bar feeder.

Loosen the two screws (1). Adjust the chain by tightening equally the two flathead screws (2) that extend from the block through the rear plate of the machine. Tighten the two screws (1).

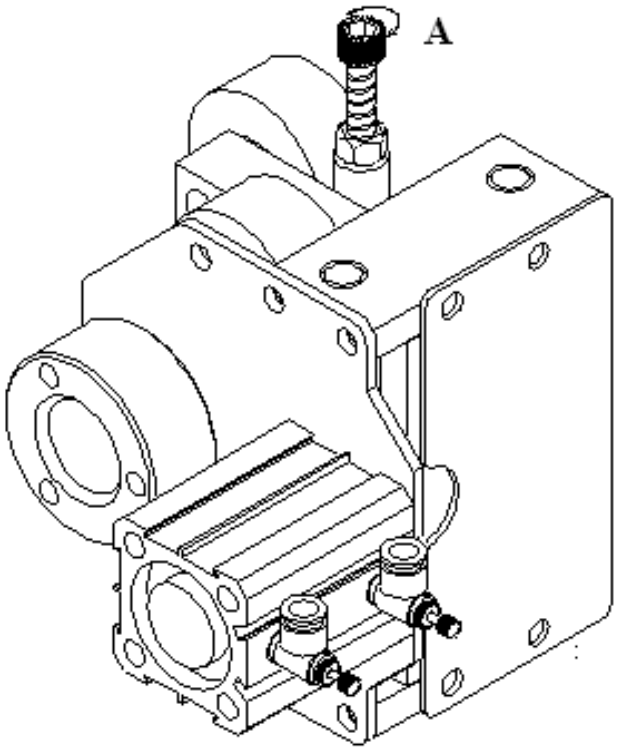


The feeding chain should periodically be lubricated with a suitable oil.

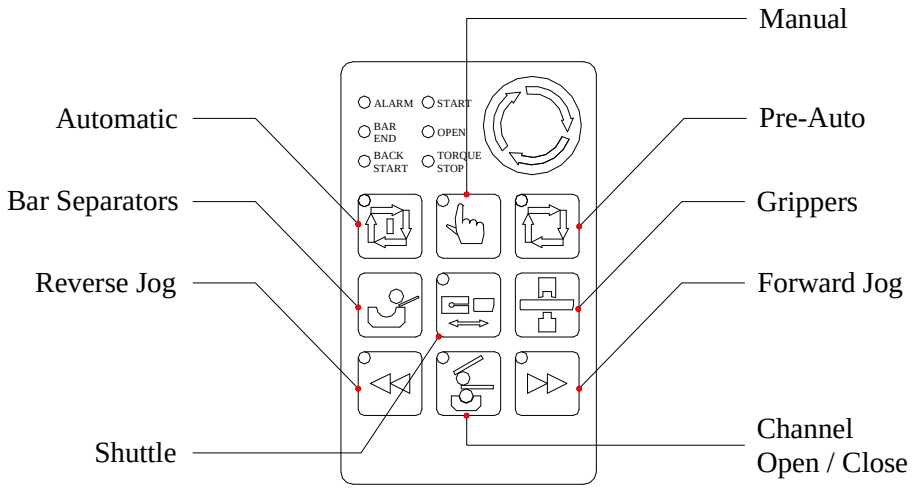
5.4 Moveable Anti-Vibration Device (MAVD) adjustment

Load a bar into the lathe headstock and close the collet. Press the Pre-Auto button , the MAVD will close. Back the screw “A” off counterclockwise until no tension is felt on the screw. Press the Manual button , then the Pre-Auto button . This will make sure the rollers are closed onto the bar.

Rotate screw “A” clockwise until tension is felt, then rotate clockwise ¼ turn further. Tighten the jam nut on screw “A”. Press the manual button to release the rollers.



6. Control Operations and Descriptions



6.1 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.

1. Press and hold the ***Reverse Jog*** button until the pusher is fully retracted.

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

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

4. Press the ***Grippers*** button to open the grippers.

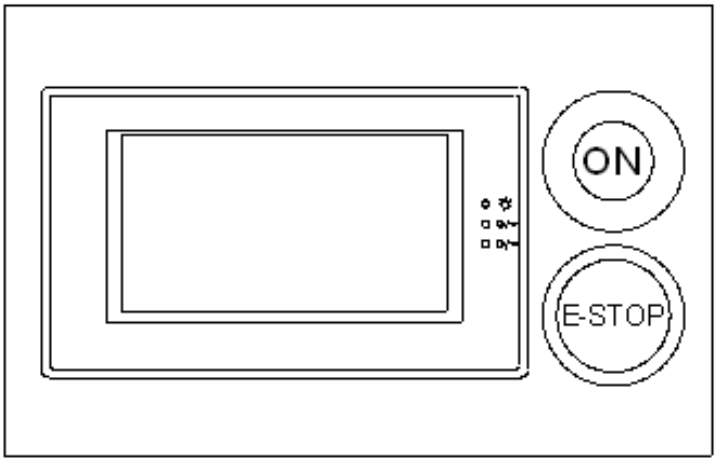
5. Press the ***Channel Open / Close*** button to open the guide channels. The LED on the button will light when the channels are fully opened.

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.



6.2 To Power Up and Place the Bar Feeder In Automatic

Turn on the main switch on the bar feeder electrical cabinet.

Check to make sure the emergency stop buttons on the pendant and the main control panel are released.

Press and hold the green on button on the main control cabinet. The green button will light when the bar feeder is on.

Close the collet on the lathe.

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)

6.3 To Power Up After An Alarm

Check the alarm message, it will give details about the alarm. See section 11.

Clear the cause of the alarm.

Press the green start button on the HMI (main control panel of the bar feeder).

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.

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.

Before the guide channel can be opened or closed the bar pusher must be at home position and the shuttle must be at the rear limit (LED on the shuttle button ON).
When the guide channel is closed the shuttle must be in the forward position (LED on the shuttle button OFF) before the pusher can move forward.

6.4 Resetting the Bar Feeder Home Position

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:

Move the bar pusher forward of the home proximity switch (PS2).

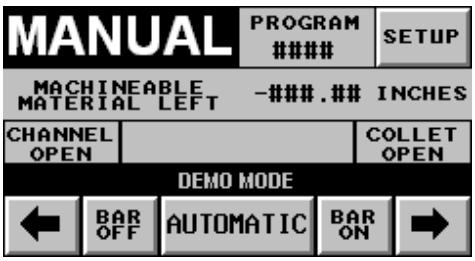
Simultaneously press and hold the forward and reverse jog buttons on the pendant control. After 8 seconds the pusher will begin to move toward the home proximity switch. There may be a short initial movement either forward or backward when the buttons are first pressed, this will stop as soon as the control recognizes both button inputs.

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.

6.5 Description of the MANUAL Screen



The Manual screen has several information items and function buttons.

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

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

The Setup button is located in the upper right corner of the screen. This button is used to access individual programs and parameters.

Below the mode status is a display of the remaining material that can be machined.

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

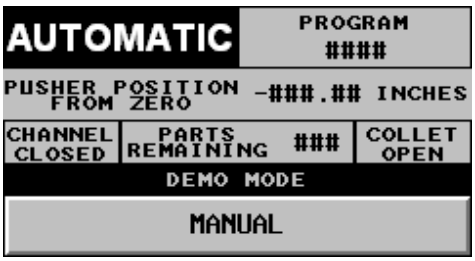
The dark band below the channel and collet status display is a message banner that shows the current operation of the bar feeder.

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

The Bar Off and Bar On buttons (described below) are next to the jog buttons.

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

6.6 Description of the AUTOMATIC Screen



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

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

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

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

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

6.7 Loading With the Bar On and Bar Off Buttons

A new bar can be loaded by using the BAR ON button.

Make sure the guide channel is closed. If there is material in the guide channel it must be short enough to fall through the remnant slot. If not see the BAR OFF instructions below.

Press the BAR ON button.

The bar pusher will retract to the home position.

The grippers will close on the bar (if present, there need not be a bar in the channel at this step).

The pusher will retract and the channel will open.

A new bar will fall into the guide channel.

The pre-feed pusher will move the bar forward ahead of the pusher collet.

The pre-feed pusher will retract and the channel will close.

The grippers will hold the bar as the pusher collet is forced over the material.

The grippers will open and the bar will move forward to the facing position and stop.

Manually close the lathe collet. The bar feeder can now be placed in Automatic and machining may begin.

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

Press BAR OFF.

The bar pusher will retract to the home position.

The grippers will close on the bar and the pusher will pull off the material.

The grippers will open.

The channel may then be opened with the Pendant control and the stock removed.

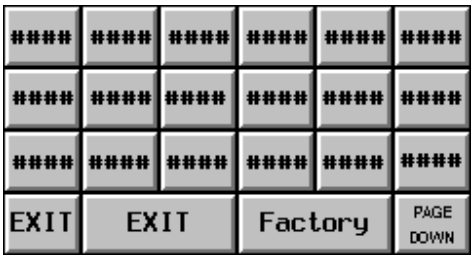
Close the channel, shuttle the pusher forward and then the BAR ON button may be used to load the machine.

6.8 Entering a New Program

The Patriot can store up to 36 individual program setups. Each setup will have a user chosen 4 digit number. 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.

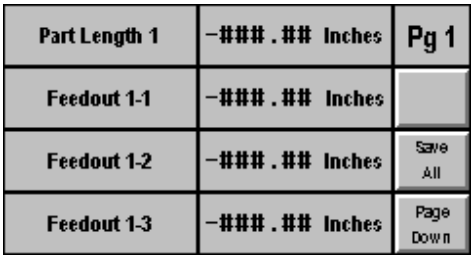
A template is made in the bar feeder during the machine installation that is pulled up each time a new setup is started. The template stores information such as the maximum useable travel of the bar pusher and the distance from the bar feeder measuring gate to the face of the lathe chuck.

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.

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.



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.

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 1 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.

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.

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

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.

Page 3 continued

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.

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.

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.

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. See section 8 for parameter descriptions.

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.

6.9 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.

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.

7. General Maintenance

Hazard Warning

Before doing bar feeder maintenance, turn off 3 phase power and disconnect the air supply. For consistent operation of the bar feeder maintenance checks should be performed regularly. The area around the barfeed should be kept clean to avoid safety issues. Using petroleum or other solvents may damage plastic components.

7.1 Periodic Maintenance

The items on the chart below should be performed at the intervals as listed.

Component	Action	Frequency				
		Hours			Regular	Period
		200	1250	2500		
Collet	Check wear	●				
Guide channel	Check wear and clean		●			
Feeding chain	Lubrication	●				
	Tension	●				
Air cleaner	Check				●	

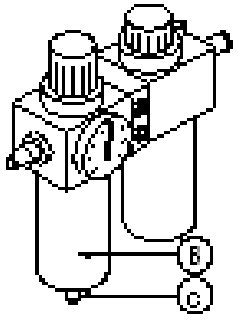
7.2 Rotating tip and collet

Check the rotating tip for excessive side play. The tip should rotate smoothly. Excessive side play or roughness in the rotation of the unit indicate bearing wear and will cause the unit to fail. The rotating tip is not repairable, it must be replaced.

Inspect the collet for cracks or wear. The collet should have sufficient strength to make inserting or extracting a remnant by hand extremely difficult. Replace damaged or loose collets as soon as possible.

7.3 Air filter/regulator/lubrication unit

Check the bottle “B” for collected condensation. Drain the condensation by pressing the valve “C”. Check the lubricator bowl for adequate oil supply. Adjust the regulator as needed. See section 2.4.2 for more information.



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.

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.

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.

Parameter Page 2 (Option)

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.

Parameter Page 2.1

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.

Parameter Page 2.2

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. 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.

Parameter Page 2.3

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.

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 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%.

Parameter Page 4

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.

Parameter Page 5

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. Choices are Extraction, Ejection and Return & Wait.

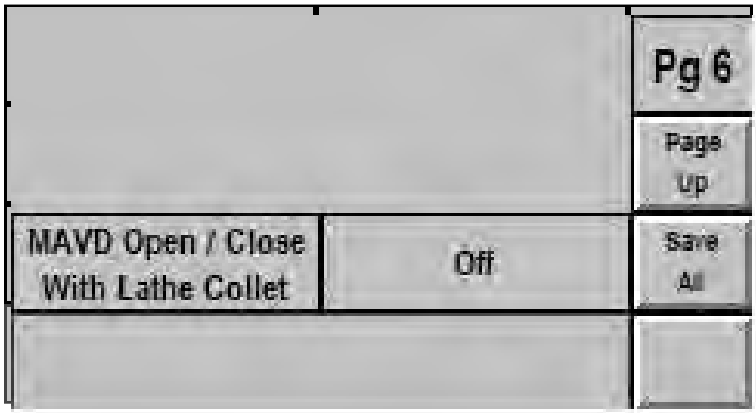
Extraction: The material is held in a finger collet. The remnant is returned with the bar pusher, the grippers close on the remnant and the pusher pulls the collet off the bar end. The grippers open and the remnant falls into the pan. The grippers close to check for the presence of material. If no material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

Parameter Page 6



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.

Parameter Page 11

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 quide 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.

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.

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.

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 feedout 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.

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.

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 off these two parameters causes the lathe spindle rotation to pulse as an aid to inserting the new bar through the collet.

Parameter Page 16

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.

Parameter Page 17

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.

Collet Open Changes how the bar feeders PLC puts out the Signal.

Bar Change Changes how the bar feeders PLC puts out the Signal.

Feed Stop Changes how the bar feeders PLC puts out the Signal.

Parameter Page 18

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.

Parameter Page 19

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.

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

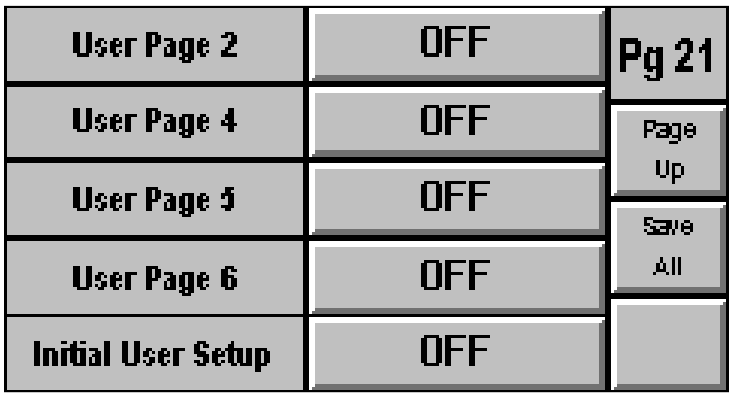
User New Program Password Sets a password to be required before access to write a new barfeeder program is allowed. Default password is 0.

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.

Parameter Page 21



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.

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 slow down 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.

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.

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.

Parameter Page 25

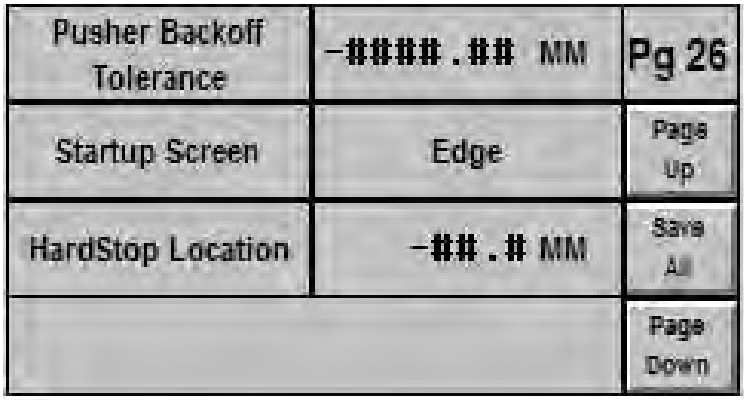
Collet Close Speed	#### MM/SEC	Pg 25
Collet Close Torque	### %	Page Up
1st Anti-Vibration Closing 1st Feed	Off	Save All
		Page Down

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.

Parameter Page 26



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.

Setup Screen Changes name on setup screen

Hardstop Location Sets the hardstop location on the bar feeder.

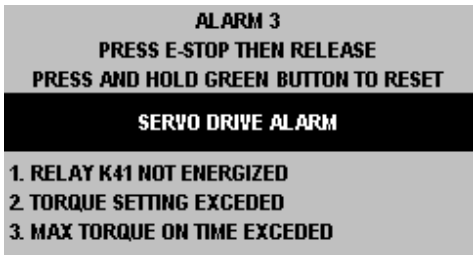
-HMI Cable not attached to PLC - Check the cable from the PLC in the electrical cabinet (round black cable located on the front of the PLC next to the Run/Stop switch) to the back of the control panel (rectangular 9-pin plug connected to the COM 2 port).

-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.

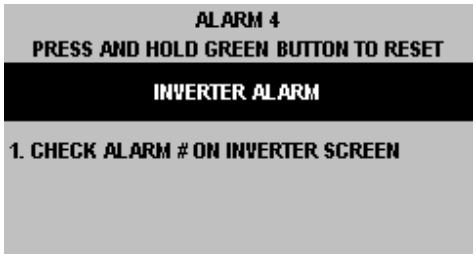
-Check relay K41



-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.



Inverter Alarm

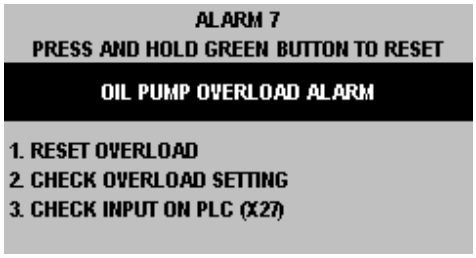
-Reset lathe e-stop

-Reset lathe alarm

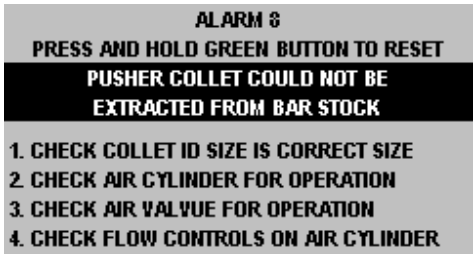
-Check wiring on interface - Check for continuity between the wires for Emergency From Lathe (if used, check the interface drawing specific to the lathe).

-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).

-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.

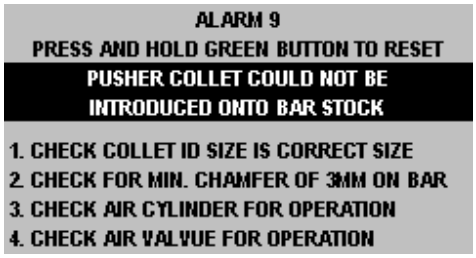


-Reset Overload - The overload is attached to the MS1 relay. Press the blue button to reset.
-Check overload setting - The setting range on the overload is from 1.2 to 1.6 amps. Normal setting is approximately 1.4 amps.
-Check input on PLC (X27) – The LED should be off when the relay MC1 (Servo Drive) is on. Check for continuity between MC1/1 and MC1/2.

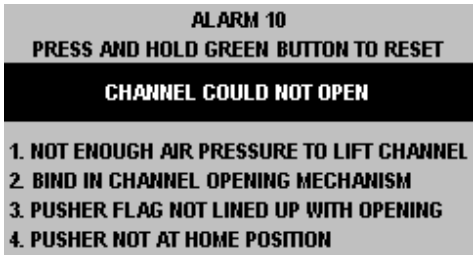


-Check collet ID size is correct size - Check the collapsed ID of the collet .

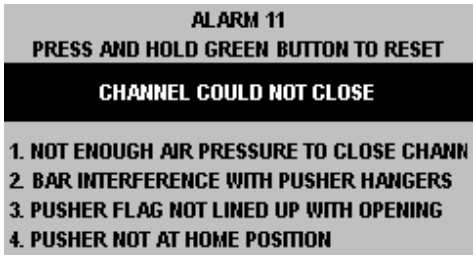
-Check air cylinder for operation - Operate the pusher shuttle without material in the collet to check for proper operation.
-Check air valve for operation - Operate the pusher shuttle without material in the collet to check for proper operation.
-Check flow controls on air cylinder - Open the flow control 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.



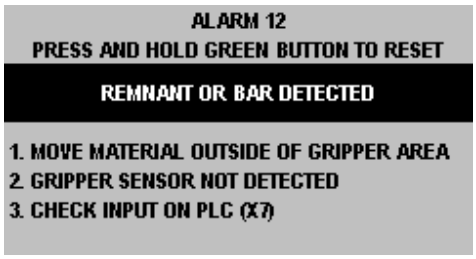
-Check collet ID size is correct size - Check the collapsed ID of the collet .
-Check for minimum chamfer of 3mm on the bar end
-Check air cylinder for operation - Operate the pusher shuttle without material in the collet to check for proper operation.
-Check air valve for operation - Operate the pusher 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.



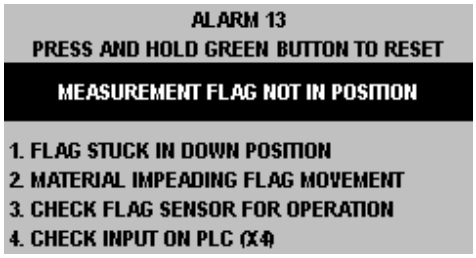
-Not enough air pressure to lift channel – Check the air pressure gauge. Increase pressure with the regulator if necessary.
-Bind in channel opening mechanism – Check for loose channel sections, alignment of pusher flag in opening, attachment of the air cylinder to the upper channel mechanism.
-Pusher 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.



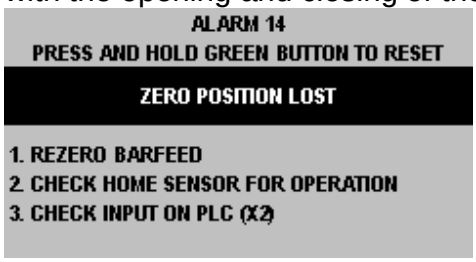
-Not enough air pressure to lift channel – Check the air pressure gauge. Increase pressure with the regulator if necessary. Open the flow control valves for channel close slightly
-Bar interference with pusher hangers – Check for material under the bar pusher. Material should be positioned with edge 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.



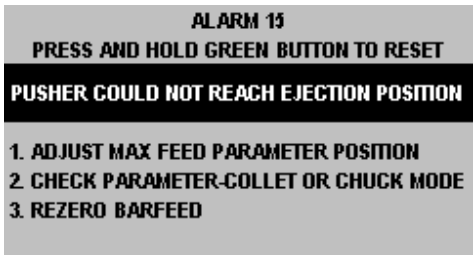
-Move material outside of gripper area – Before the channel can open the grippers first check for material in the grippers. If a bar is present it must be moved forward so the grippers will not close on it.
-Gripper sensor not detected – Check the proximity switch on the gripper unit.
-Check input on PLC (X7)



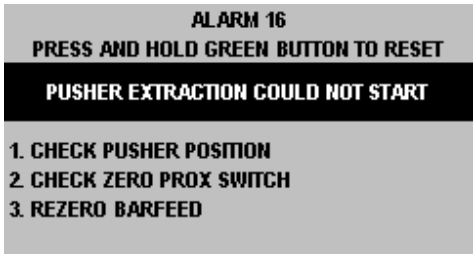
-Flag stuck in down position – Manually operate the measuring flag. Check for debris impeding the operation of the flag. Check the flag for damage.
-Material impeding flag movement – Remove the material from the flag area.
-Check flag sensor for operation – Manually operate the flag and check to see 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.



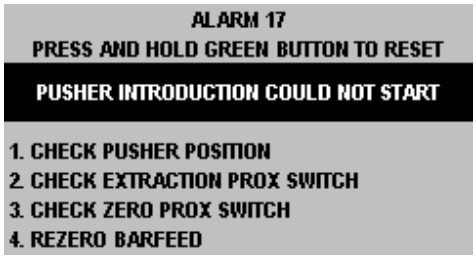
-Rezero barfeed – Start with the guide channel closed and the pusher forward about 12 inches. Press and hold the forward and reverse buttons on the pendant. After 8 seconds the pusher will begin to move backward. Release the buttons. The pusher will move back to the proximity switch for zero and then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



-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.

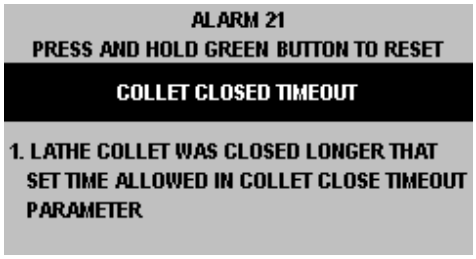


-Check pusher position – The zero proximity switch must be on, the pusher position should read near 0.
-Check zero proximity switch – Move the pusher back and forward under the zero proximity switch and check that the LED lights, check input X2 - it should light when the proximity switch lights.
-Rezero 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.

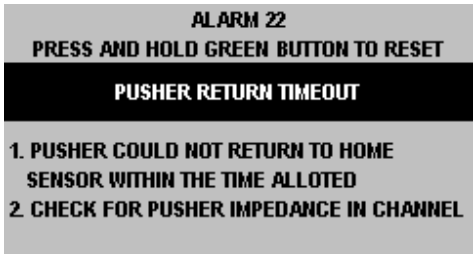


-Check pusher position – The zero proximity switch must be on, the pusher position should read near 0.
-Check extraction proximity switch – Verify proximity switch PS3 is on, verify input X3 is on.
-Check zero proximity switch – Move the pusher back and forward under the zero proximity switch and check 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.

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



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

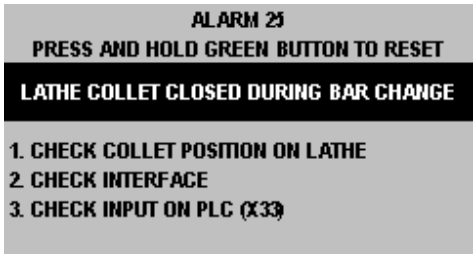


-Pusher could not return to home sensor within the time allotted – Check pusher flag for damage, check bar pusher for protruding roll pins.
-Check for pusher impedance in channel – Verify that channels are free of debris and are securely locked in place.

-Remnant was not pulled out of lathe – Check the part length parameter and feedout subparameters for correct settings. Part length should equal the actual part length + cutoff tool width + facing stock. Feedout subparameters combined should equal the part length setting.
-Check for remnant in lathe or guide channel and remove
-Check gripper sensor and PLC input (X7)

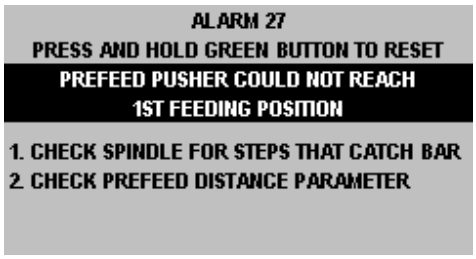
-Verify the Max Feed Position – If the max feed position is set to a value higher than the actual position the lathe headstock may push the bar pusher off the material when retracting to re-grip for the last part.

-Load bars on magazine
-Check gripper sensor and adjust
-Check input on PLC (X7)

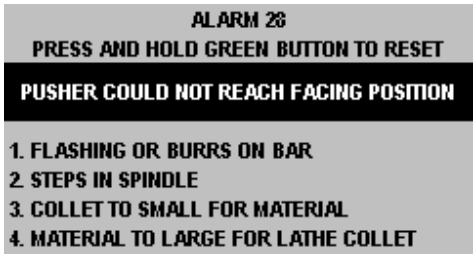


-Check collet position on lathe – Verify state of the lathe collet and compare to the bar feeder screen to see if they match.
-Check interface – See interface drawing specific to the lathe, check connections for the collet open signal.
-Check input on PLC (X23) – The input should toggle on and off with the opening and closing of the lathe collet.

-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.



-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).

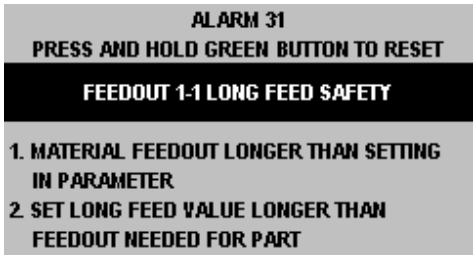


-Flashing or burrs on bar – The front of the bar must be at least burr free and should have a small chamfer.
-Steps in spindle – A spindle liner may be required to provide a clear path for the material. A larger chamfer on the front end of the bar may help the material past the steps.
-Collet too small 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

-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.

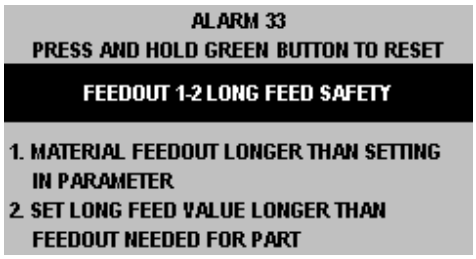
-Leave lathe in auto during bar change – Some lathes must be left in cycle to maintain the automatic signal. Turn of the single block mode and leave the lathe door closed during bar change.

-Material feedout 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 feedout needed for part – The value should be set at least 1mm shorter than the part feedout.



-Material feedout 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 feedout for part – The value should be set at least 1mm longer than the part feedout.

-Material feedout 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 feedout needed for part – The value should be set at least 1mm shorter than the part feedout.



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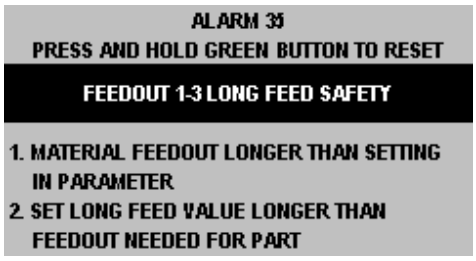

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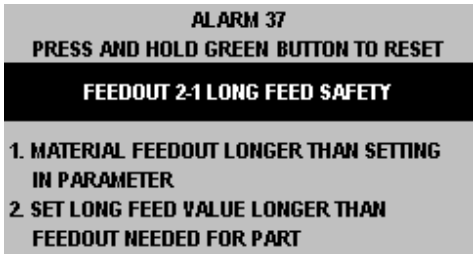
-Set long feed value longer than feedout for part – The value should be set at least 1mm longer than the part feedout.

-Material feedout 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 feedout needed for part – The value should be set at least 1mm shorter than the part feedout.



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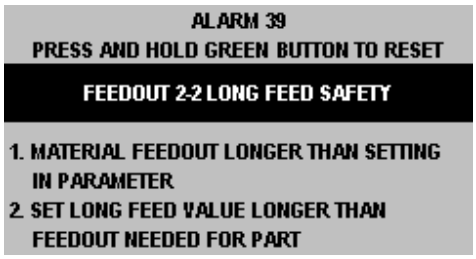

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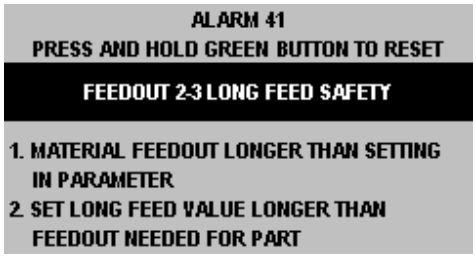
-Set short feed value shorter than feedout needed for part – The value should be set at least 1mm shorter than the part feedout.



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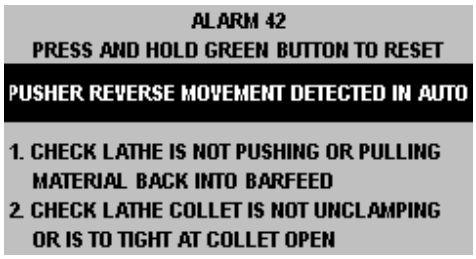
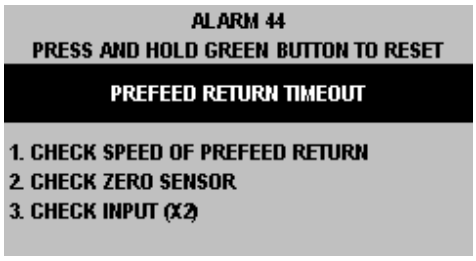
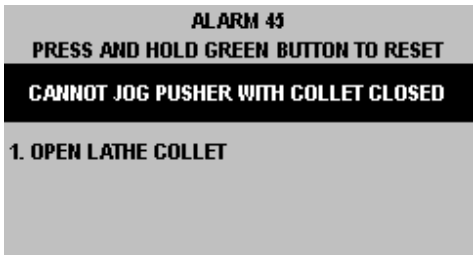


-When the bar feeder is in Auto and the lathe collet open, reverse movement in excess of 4mm was detected.
-Check lathe is not pushing or pulling material back into barfeed – Check the bar feeder synchronization device. Increase the dwell after the collet open before the re-grip.
-Check lathe collet is not unclamping or is too tight at collet open – Clean and adjust the lathe collet.

-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.



-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.

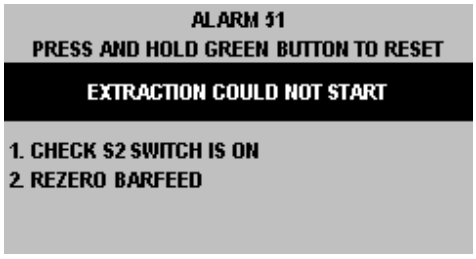


-Open lathe collet – Verify that the lathe collet is open.
-Check input X33 – The input should turn on and off with the collet opening and closing.

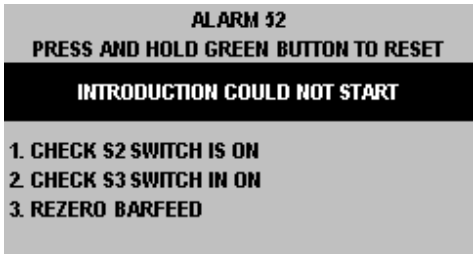
-Close the lathe door – Verify that the lathe door is closed and the safety switches are enabled.
-Check input X37 – The input should turn on and off with the door opening and closing.

-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.

-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.

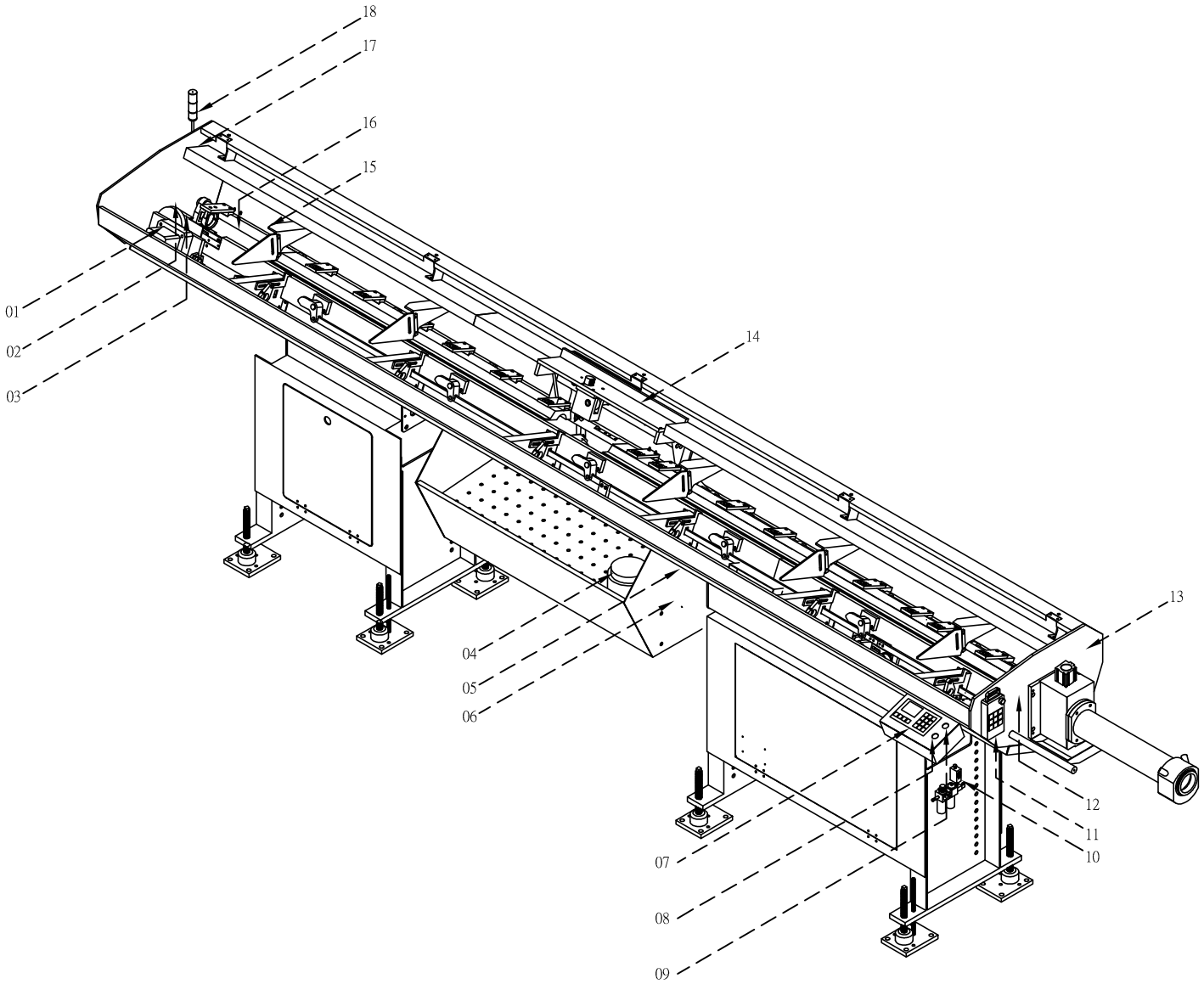


-Check S2 switch is on – Verify that the LED of the PS2 switch is on when the pusher reaches the home position and that input X2 is on when the LED of PS2 is on.
-Rezero Barfeed - Start with the guide channel closed and the pusher forward about 12 inches. Press and hold the forward and reverse buttons 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.



-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.

A4



NO.	PART NO.	CODE	FUNCTION
01	J221502	M1	SERVO MOTOR 1000W
02	J310312	PS3	CLAMPING OUT SENSOR
03	J310311	PS2	ORIGIN SENSE
04	AV510L0900	M2	OIL PUMP
05	A12140501	MS6	BAR PUSHER DOWN SENSE
06	A12140501	MS5	BAR PUSHER RISE SENSE
07	J210502	HMI	HUMAN MACHINE INTERFACE
08	J310704	ES1	EMERGENCY STOP
09	J310705	SS1	POWER ON
10	A12140400	AP23	AIR PRESSURT SENSOR
11	G91120005		REMOTE CONTROL (P.05)
12	J310313	PS4	CUTING SENSOR
13			SOLENOID VALVE DIAGRAM 2
14	J310314	MS7	CLAMP SENSOR
15			SOLENOID VALVE DIAGRAM 1
16	A12140501	MS30	CLAMP IN SENSOR
17	J311801	LS21	DOOR SAFETY
18	J310101	RL,GL	INDICATOR LIGHT

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	PAGE
2014 / 06 / 10	2015 / 09 / 30	220 VAC 3-PHASE	24VDC	P. 01

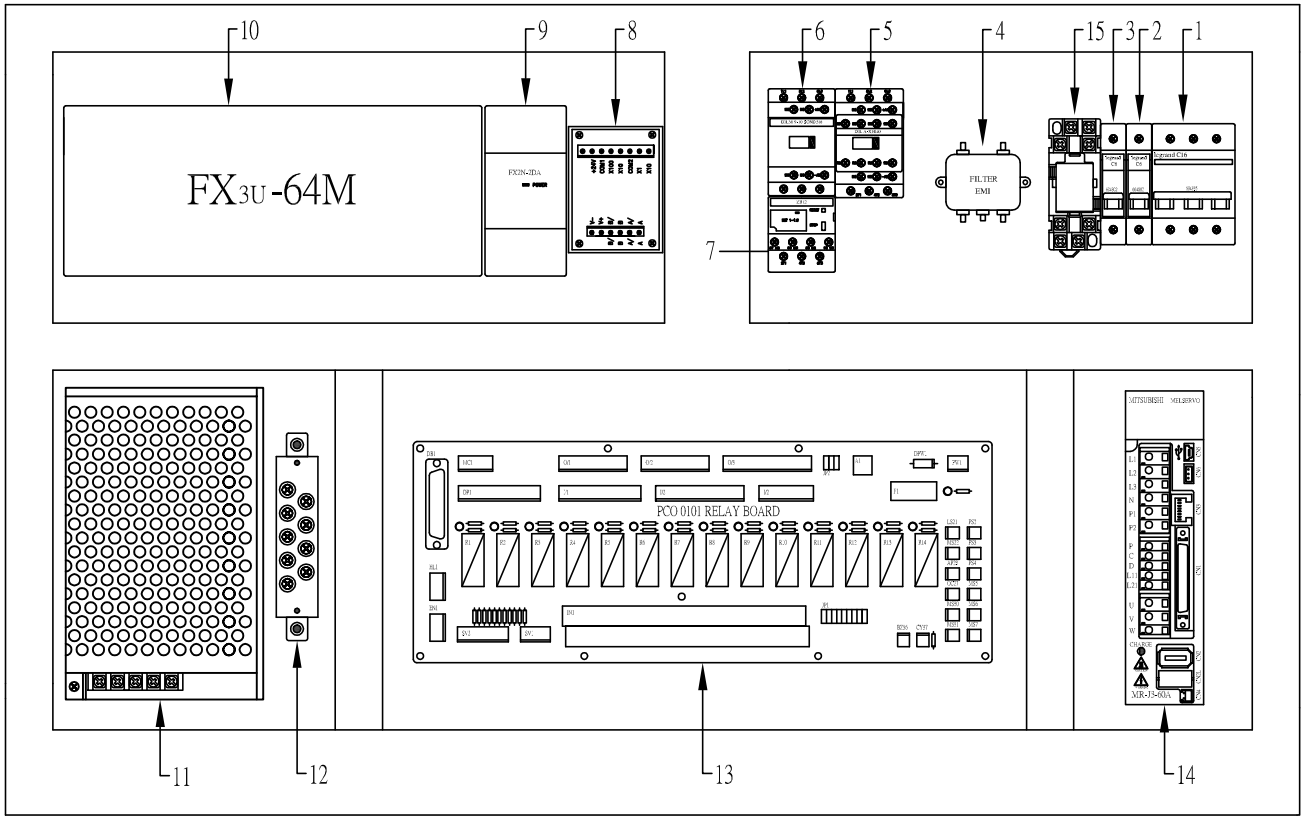
DRAWN BY:

CHECKED BY:

DESCRIPTION: Machine electricity position

DRAWING NO.: JV-CON054-EG

VERSION: B0



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 DRIVER
15	J310205	R15	Relay

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	PAGE
2014 / 06 / 10	2015 / 09 / 30	220 VAC 3-PHASE	24VDC	P. 02

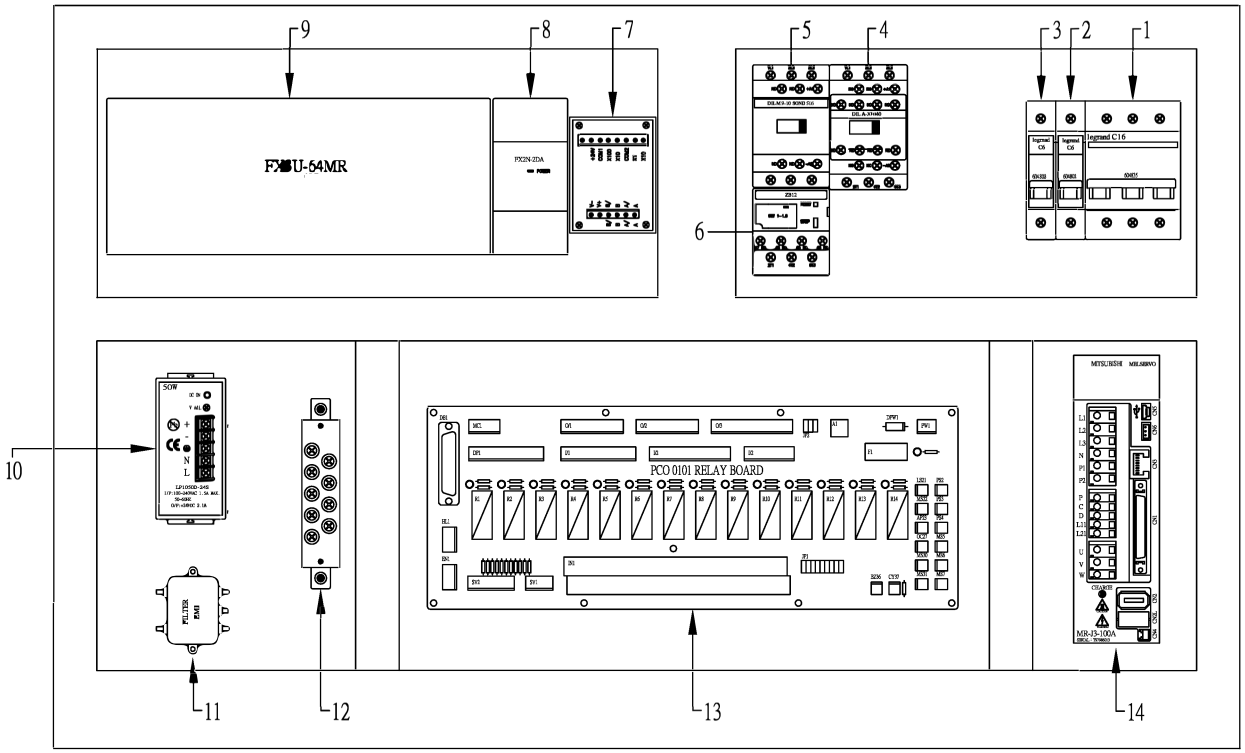
DRAWN BY:

CHECKED BY:

DESCRIPTION: Distribution of Electric parts

DRAWING NO.: JV-CON054-EG

VERSION: B0



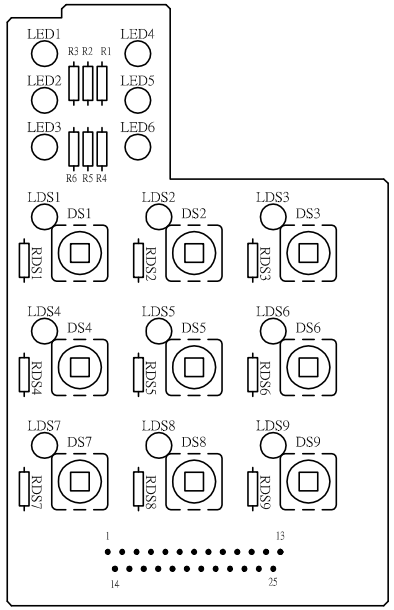
NO.	PART NO.	CODE	NAME
01	J310504	NFB1	NO FUSE BREAKER
02	J310505	CP1	CIRCUIT PROTECTION
03	J310505	CP2	CIRCUIT PROTECTION
04	J312705	MC1	MAGNETIC CONTACTOR
05	J312705	MS1	MAGNETIC CONTACTOR
06	J313300	OCR1	OVER RELAY
07	J220307	PCB2	PULSE CHANGE DEVICE
08	J220201	2DA	ANALOGY SIGNAL MODULE
09	J210800	PLC	PROGRAMMABLE LOGIC CONTROLLER
10	J230101	PS	POWER SUPPLY
11	J220405	FIL	FILTER
12	J631202	FG	GROUND
13	J510811 + J613014	PCB1	MAIN PC RELAY BOARD
14	J221201 + J220806	SD	SERVO MOTOR DRIVER

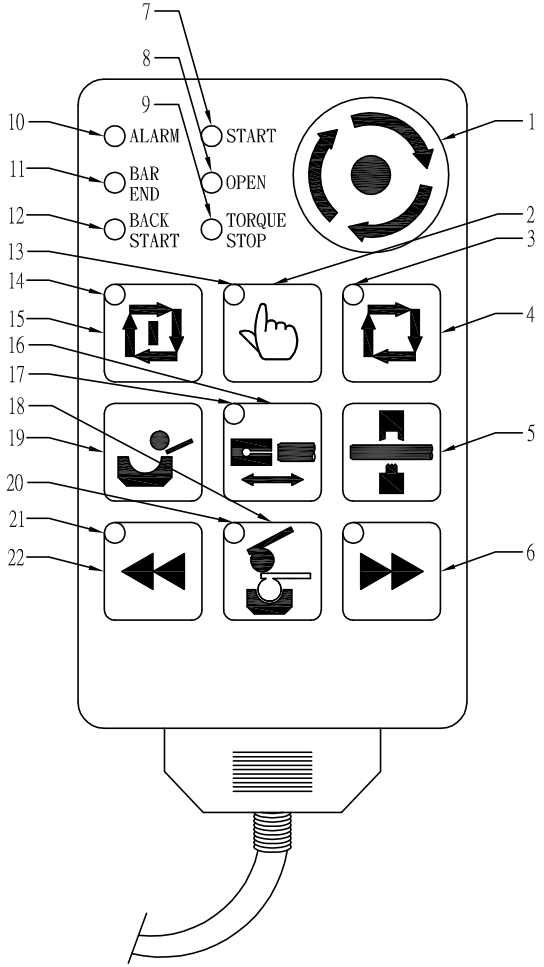
CONTROL PANEL

PATRIOT 338&551 / C-332 / M-542

DRAWN BY	SCALE= 1:1	DATE 10-14-11	
CHECKED BY	DRAWING NO. AV51CL20010	REV A	PAGE P.02

EDGE Technologies





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

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	PAGE
2014 / 06 / 10	2015 / 09 / 30	220 VAC 3-PHASE	24VDC	P. 03

DRAWN BY:

CHECKED BY:

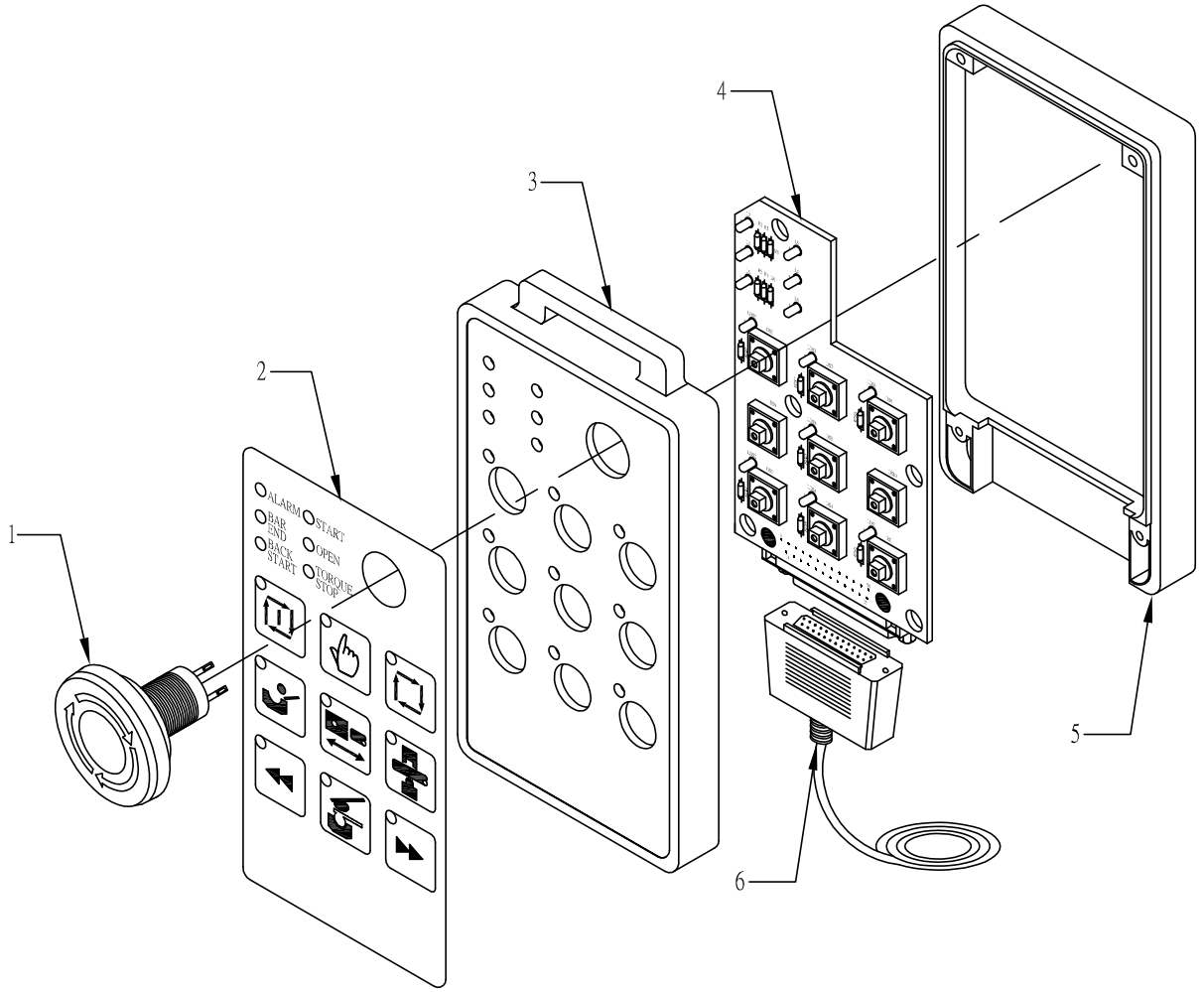
DESCRIPTION: The function and operation of keys

DRAWING NO.: JV-CON054-EG

VERSION: B0

NO.	PART NO.	CODE	NAME
01	J310702	ES2	EMERGENCY STOP
02	P33200401		PASTER
03	G91120500		TOP
04	J510800	PCB3	PC BOARD
05	G91120600		BOTTOM
06	J420600		CABLE

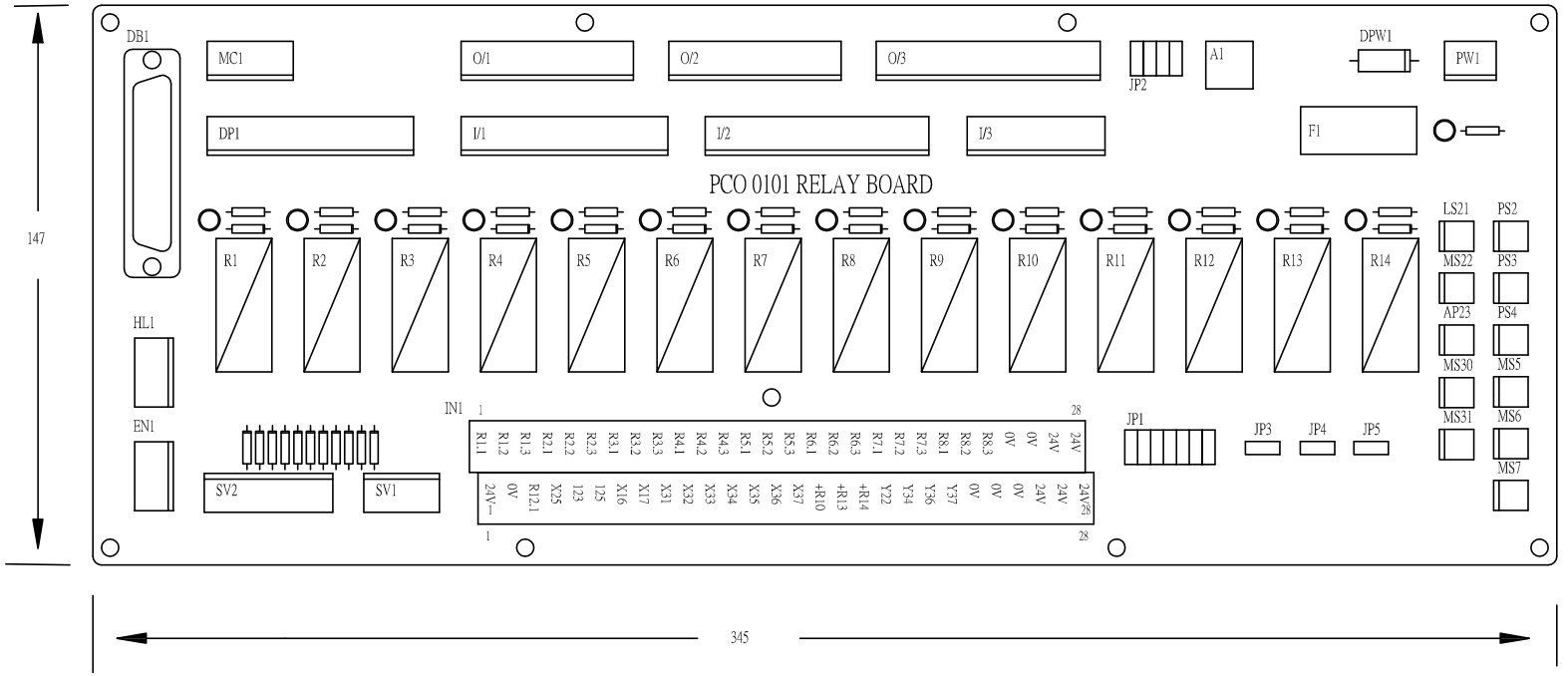
A4



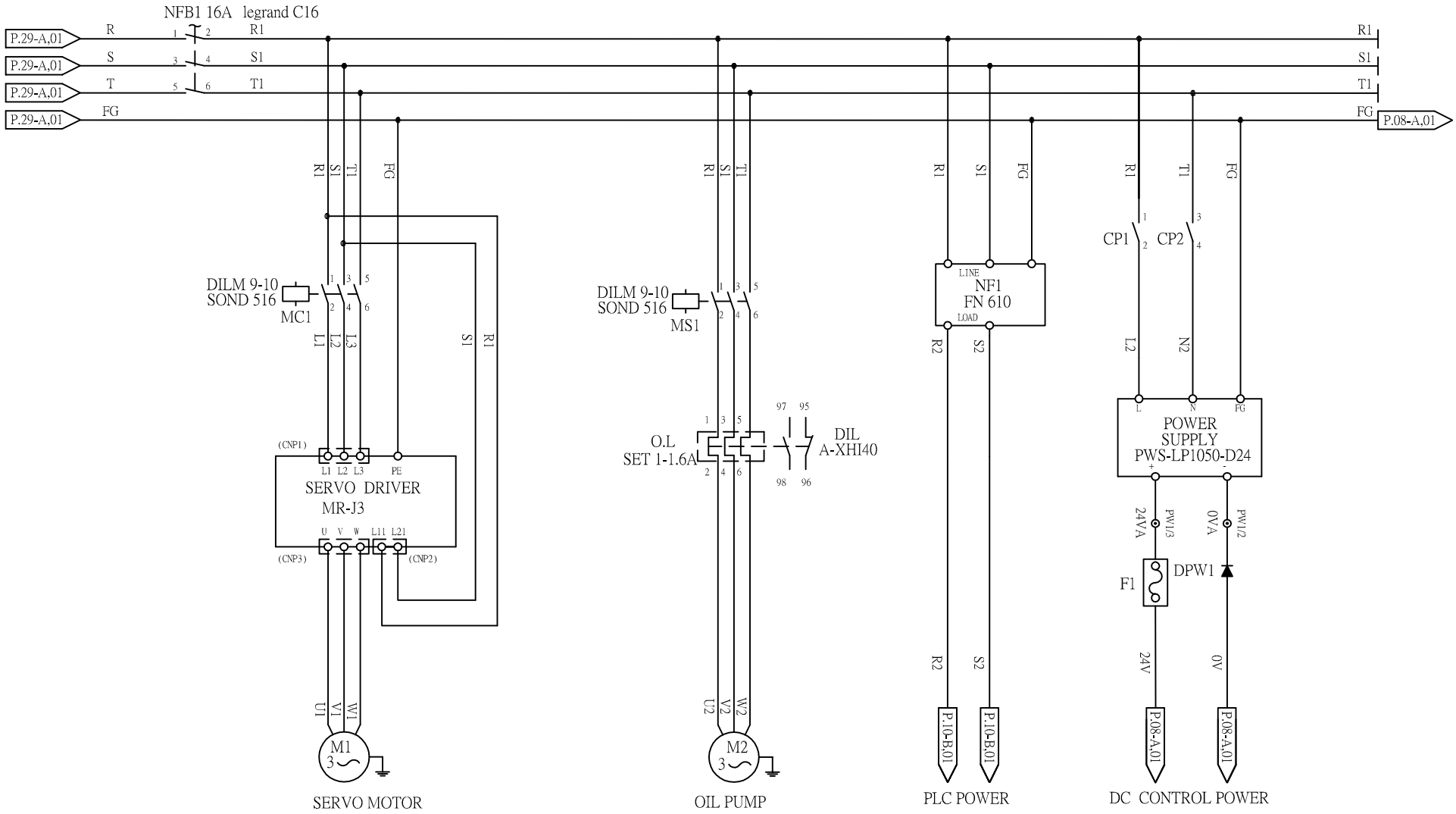
BAR FEEDER TYPE			FIRST DATE	REVISION DATE	MAIN VOLTAGE	SIGNAL VOLTAGE	PAGE
PATRIOT / C-332 / M-542	EDGE TECHNOLOGIES A DIVISION OF HYDROMAT INC		2014 / 06 / 10	2015 / 09 / 30	220 VAC 3-PHASE	24VDC	P. 04
LATHE NAME			DRAWN BY	CHECKED BY	DESCRIPTION		
					Decomposition of remote control pendant		
LATHE TYPE					DRAWING NO.		VERSION
					JV-CON054-EG		B0

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

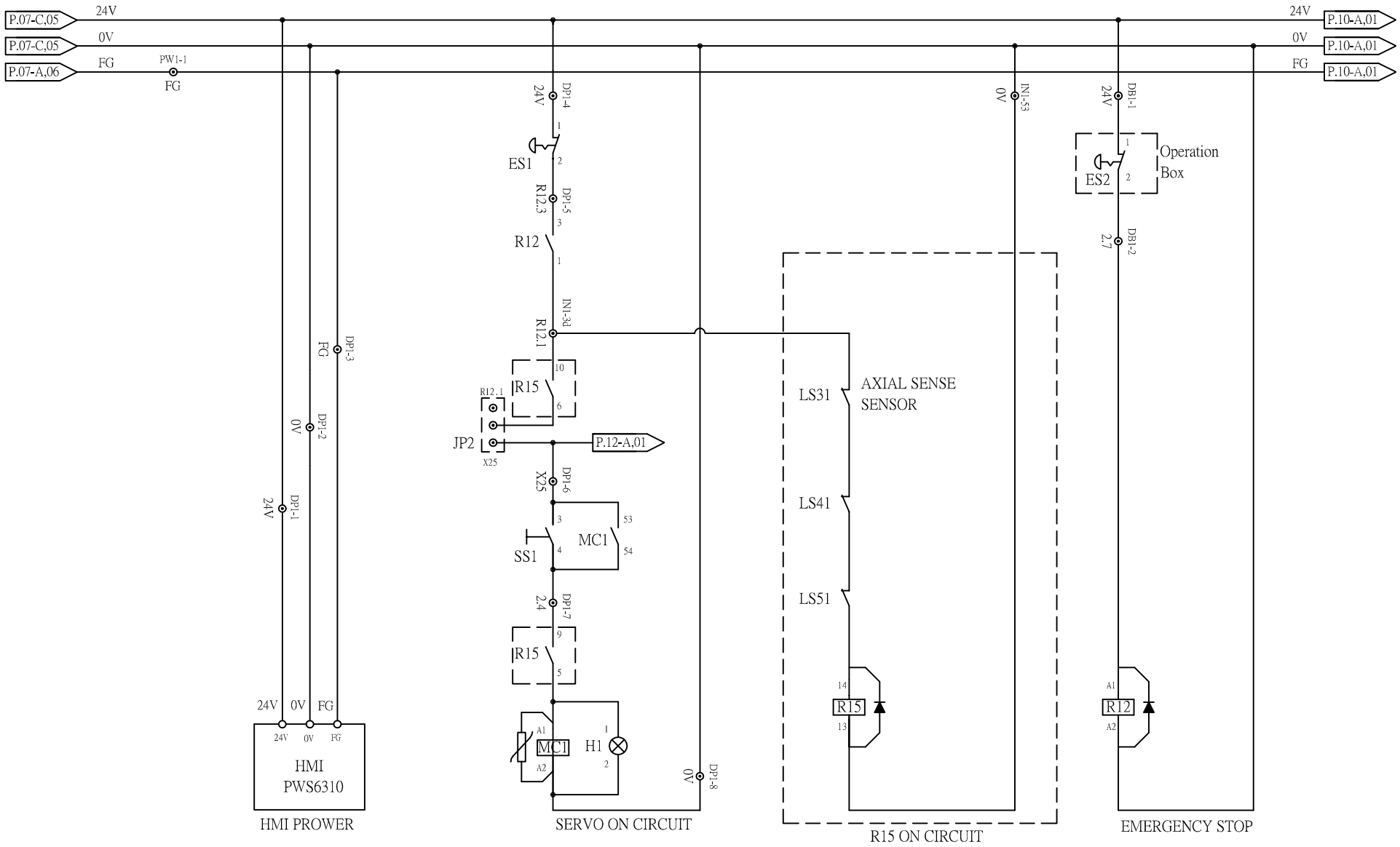
A4



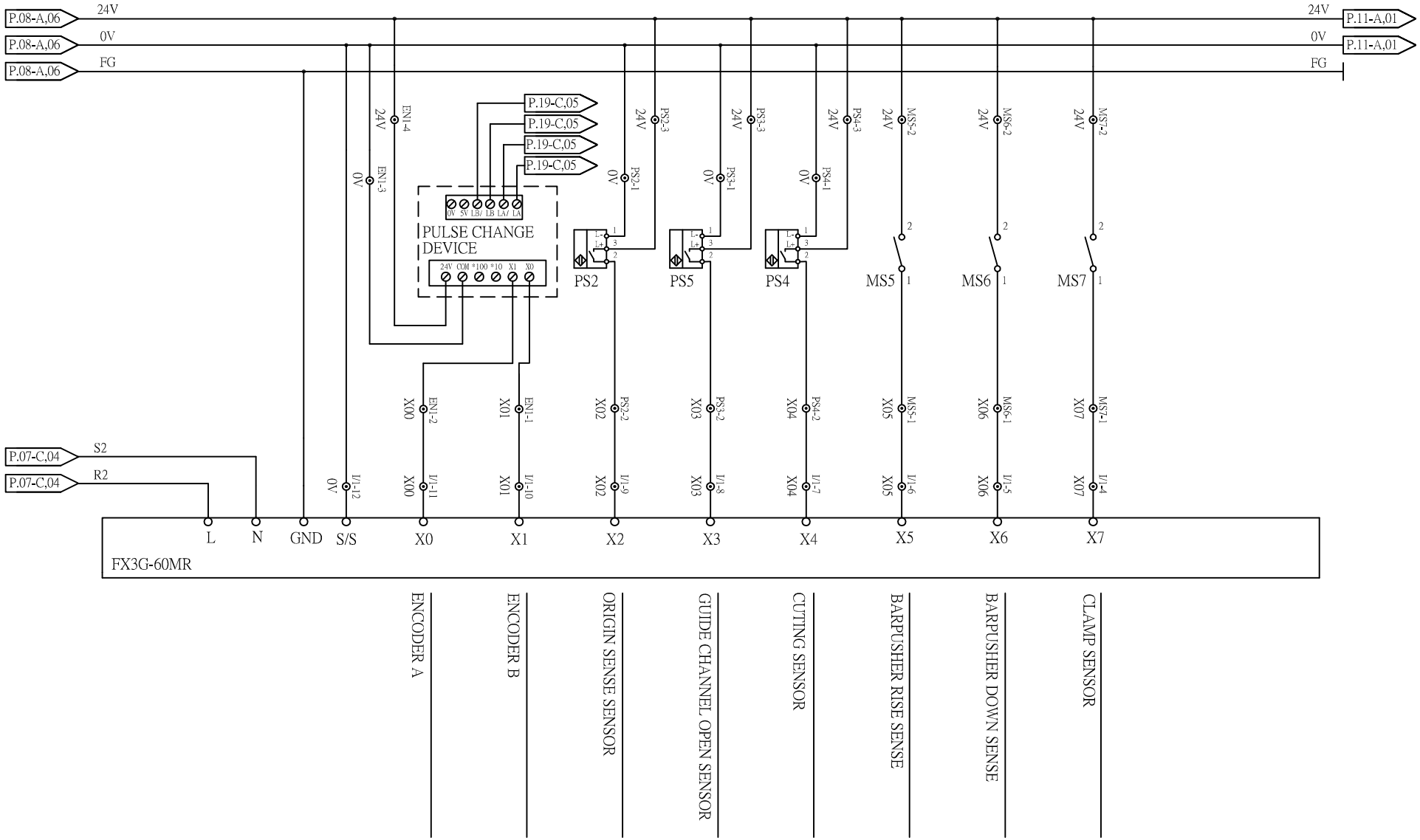
BAR FEEDER TYPE: PATRIOT / C-332 / M-542			FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 05
LATHE NAME	EDGE TECHNOLOGIES A DIVISION OF HYDROMAT INC		DRAWN BY	CHECKED BY	DESCRIPTION: Main PC board		
LATHE TYPE					DRAWING NO.: JV-CON054-EG		VERSION: B0



BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 06
LATHE NAME	EDGE TECHNOLOGIES A DIVISION OF HYDROMAT INC	DRAWN BY	CHECKED BY	DESCRIPTION: Main circuit 1-2		
LATHE TYPE				DRAWING NO.: JV-CON054-EG		VERSION: B0

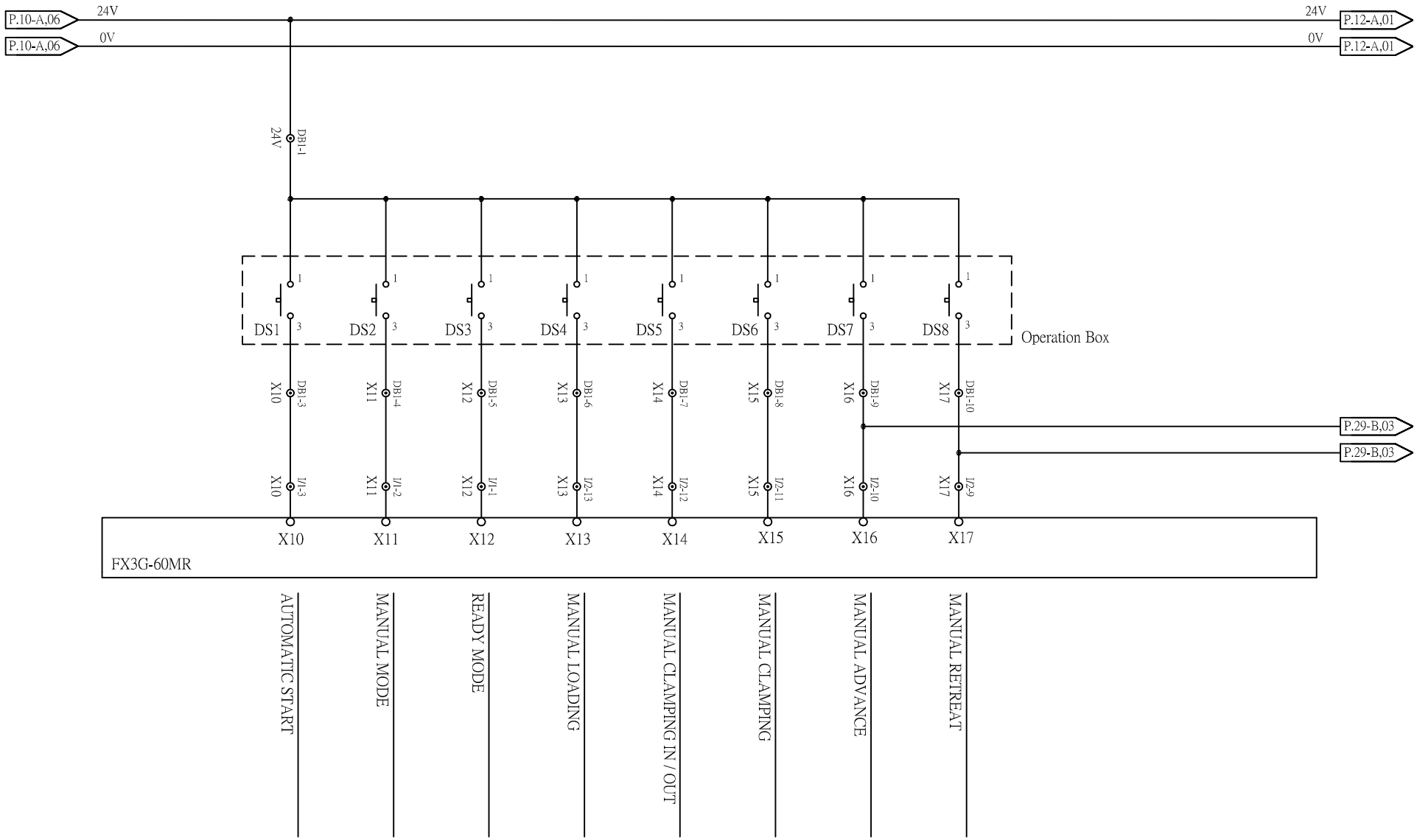


BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 07
LATHE NAME	EDGE TECHNOLOGIES A DIVISION OF HYDROMAT INC	DRAWN BY	CHECKED BY	DESCRIPTION: Main circuit 2-2		
LATHE TYPE				DRAWING NO.: JV-CON054-EG		VERSION: B0



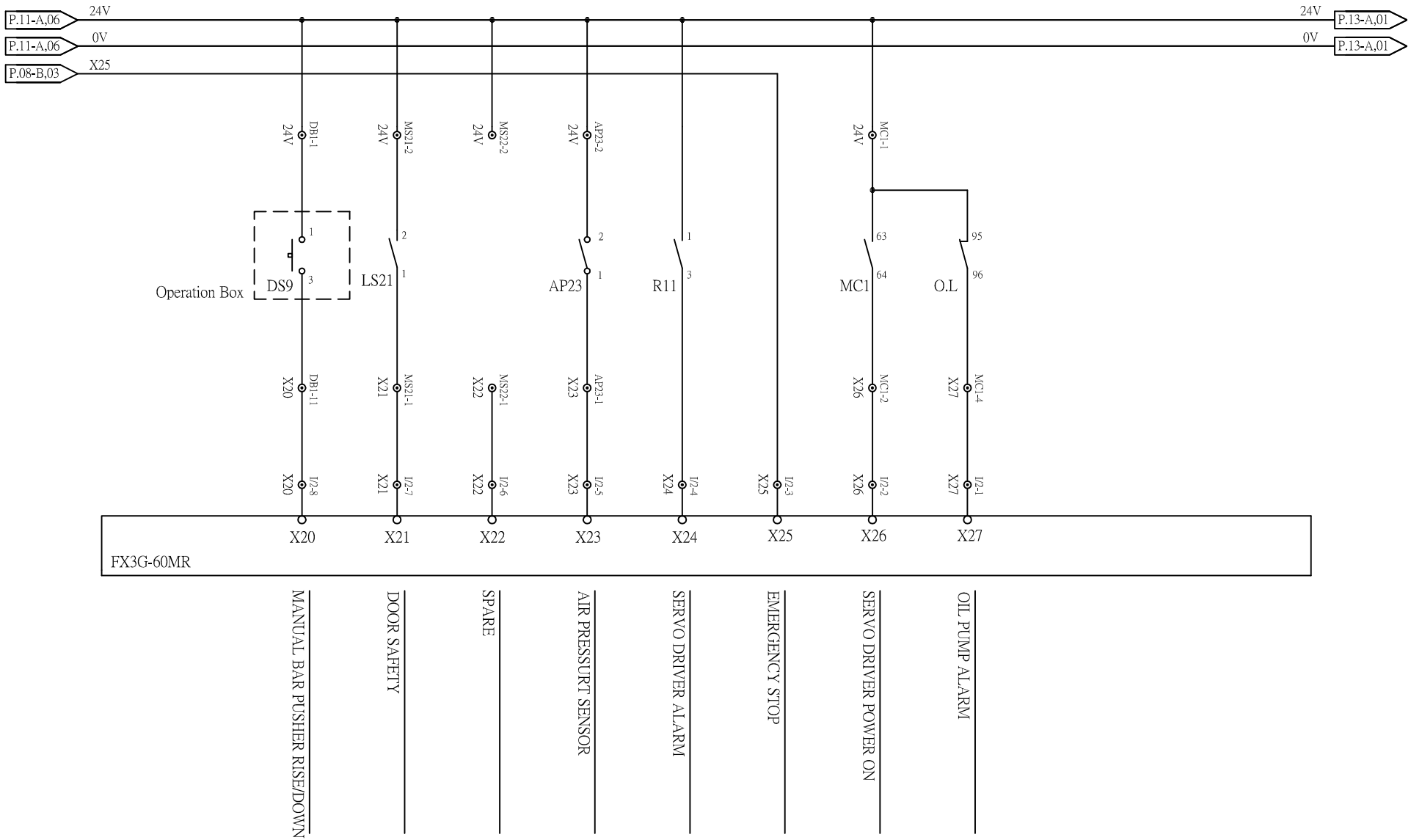
BAR FEEDER TYPE: PATRIOT / C-332 / M-542	FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 08
LATHE NAME	DRAWN BY	CHECKED BY	DESCRIPTION: PLC input 1-4		
LATHE TYPE			DRAWING NO.: JV-CON054-EG		VERSION: B0

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

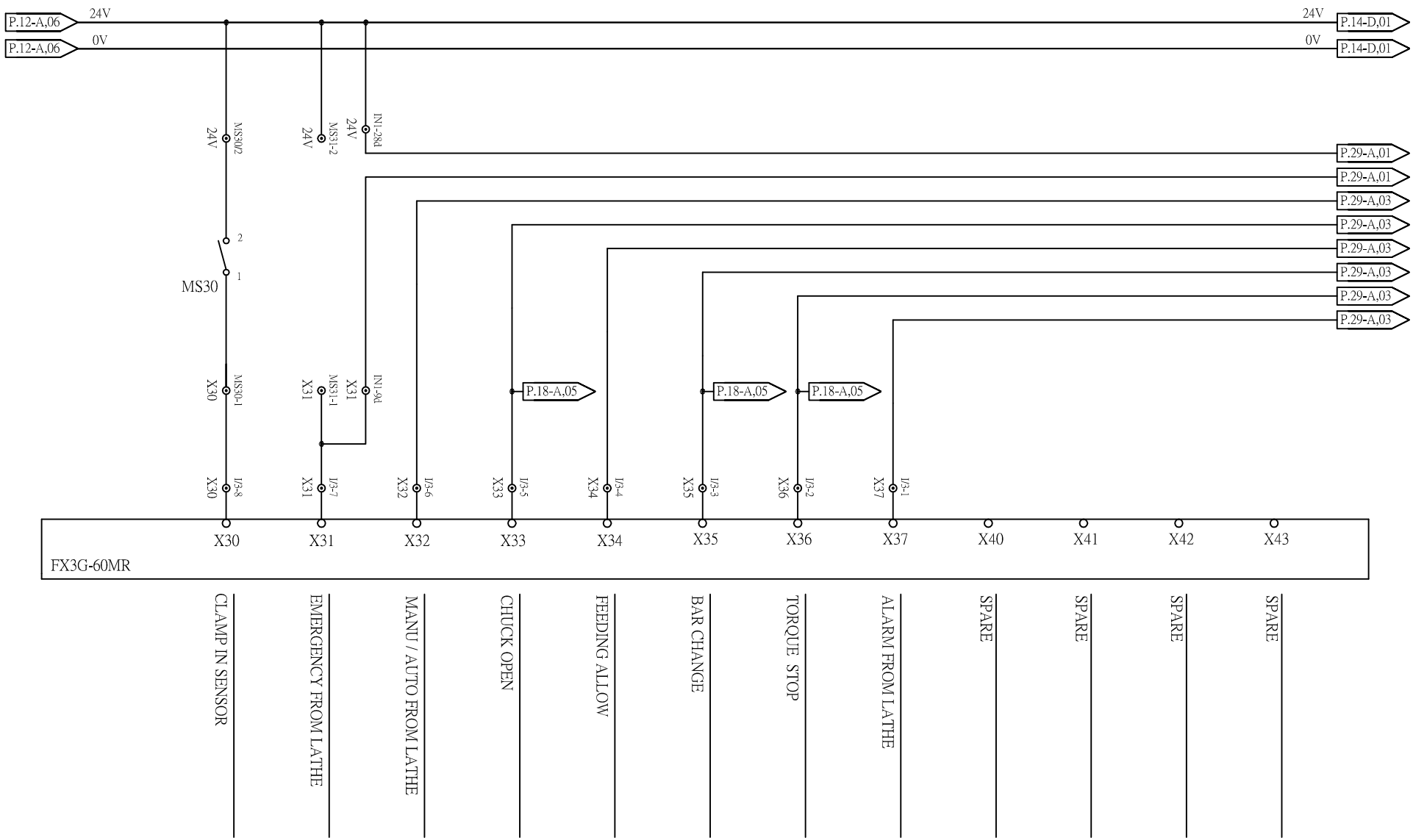


BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 09
LATHE NAME		DRAWN BY	CHECKED BY	DESCRIPTION: PLC input 2-4		
LATHE TYPE				DRAWING NO.: JV-CON054-EG		VERSION: B0

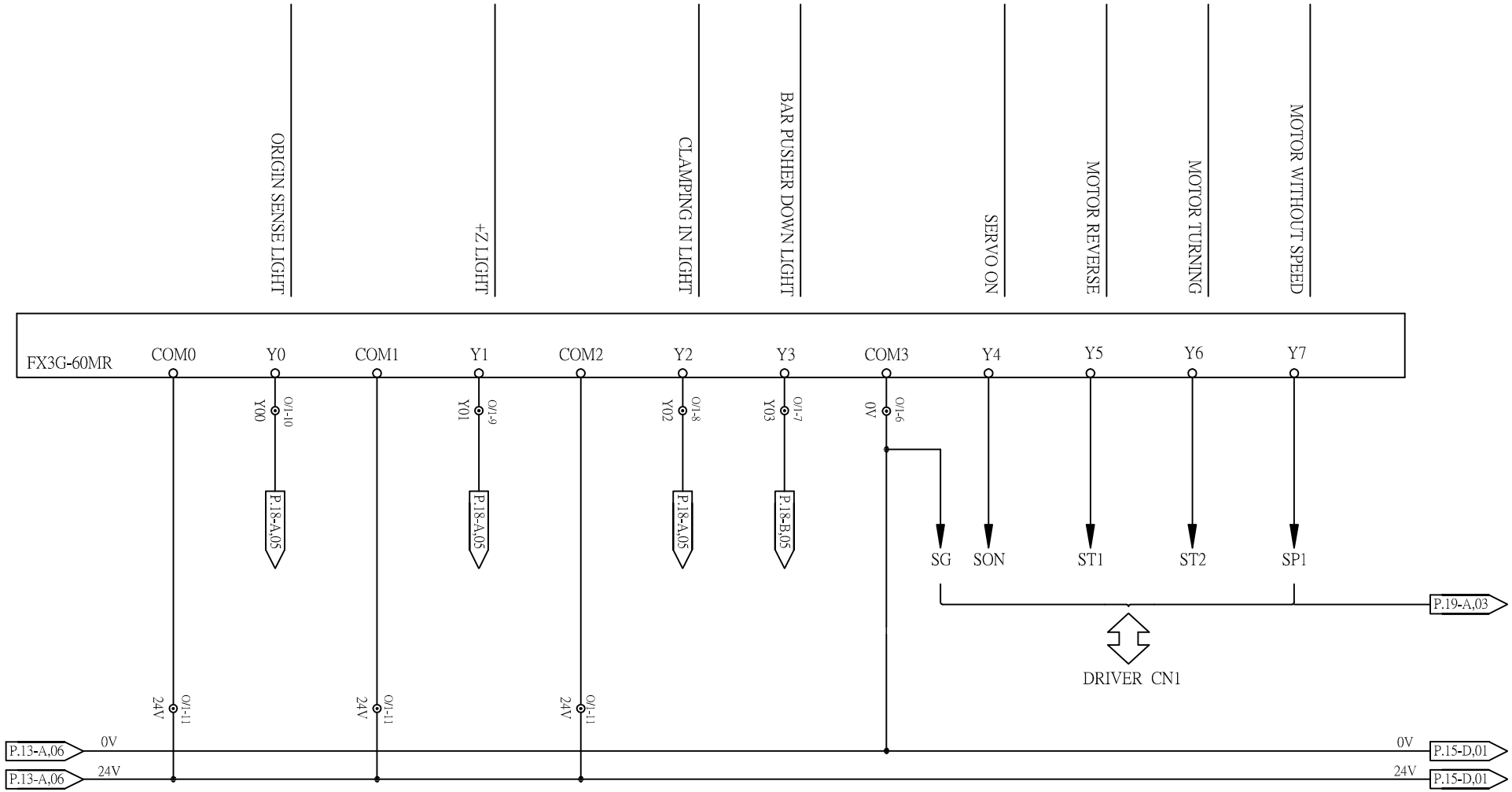
EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC



BAR FEEDER TYPE: PATRIOT / C-332 / M-542	EDGE TECHNOLOGIES A DIVISION OF HYDROMAT INC		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 10
LATHE NAME			DRAWN BY	CHECKED BY	DESCRIPTION: PLC input 3-4		
LATHE TYPE					DRAWING NO.: JV-CON054-EG		VERSION: B0

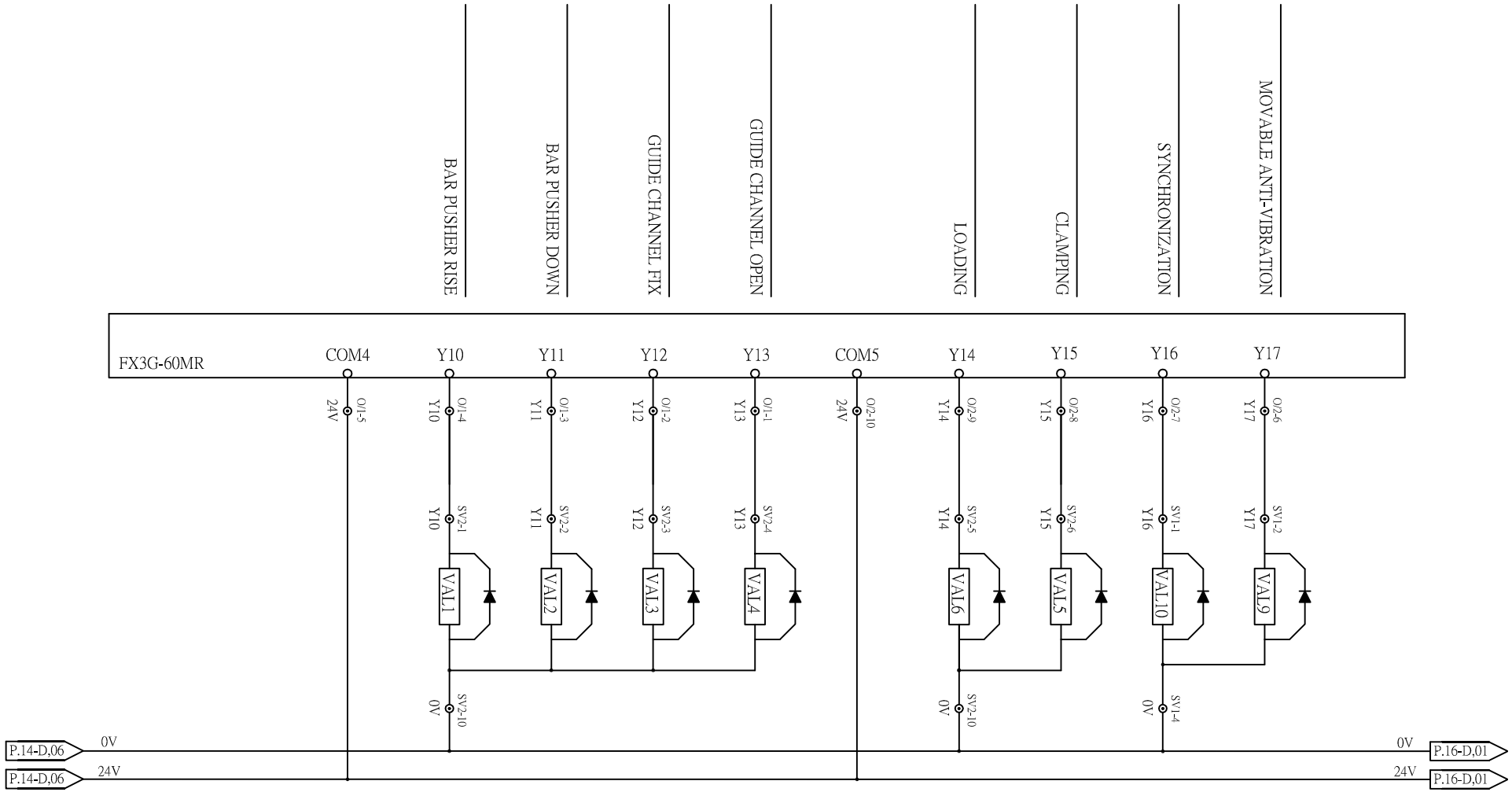


BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 11
LATHE NAME	EDGE TECHNOLOGIES A DIVISION OF HYDROMAT INC	DRAWN BY	CHECKED BY	DESCRIPTION: PLC input 4-4		
LATHE TYPE				DRAWING NO.: JV-CON054-EG		VERSION: B0



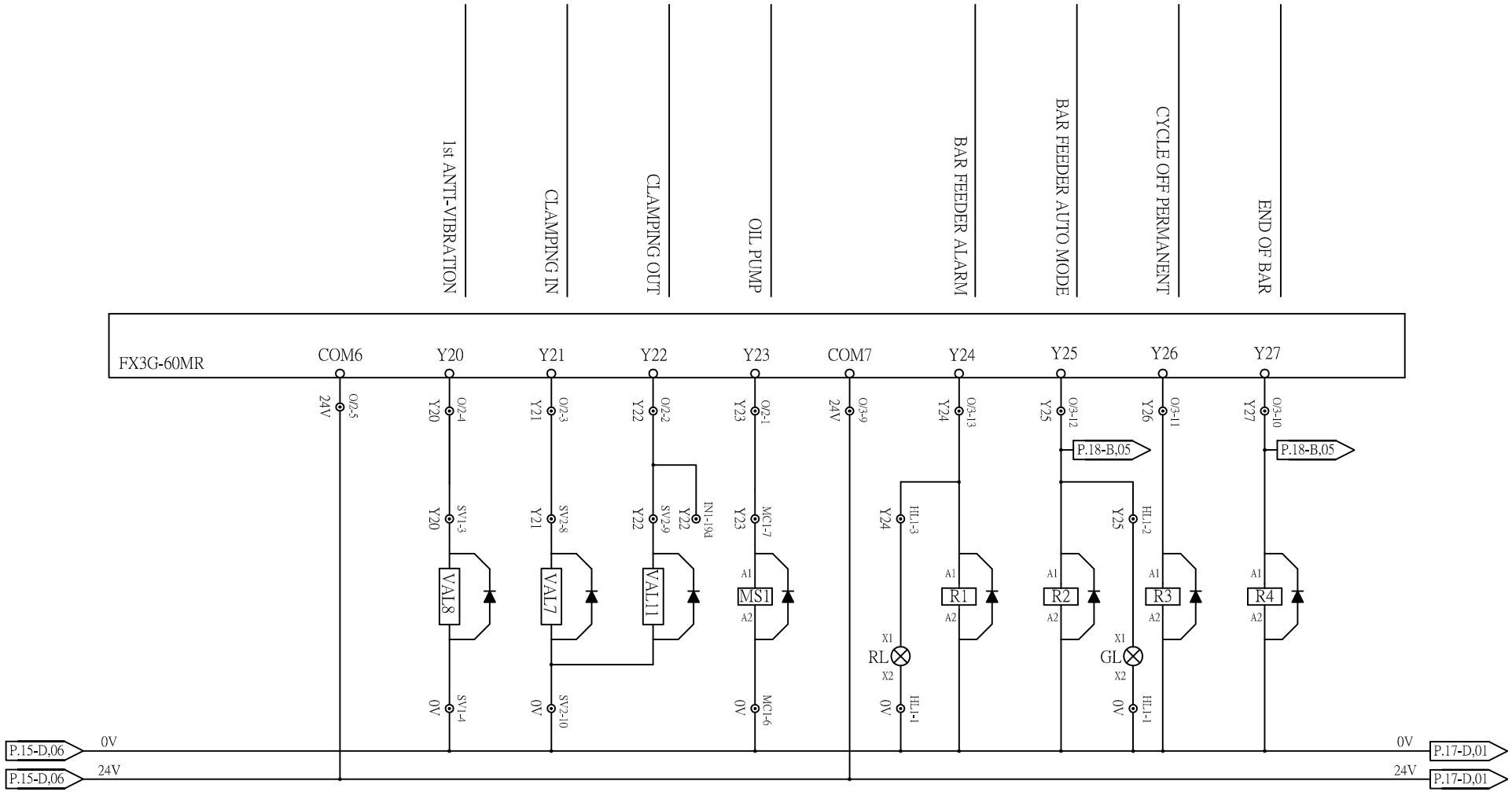
BAR FEEDER TYPE: PATRIOT / C-332 / M-542	FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 12
LATHE NAME	DRAWN BY	CHECKED BY	DESCRIPTION: PLC output 1-4		
LATHE TYPE			DRAWING NO.: JV-CON054-EG	VERSION: B0	

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC



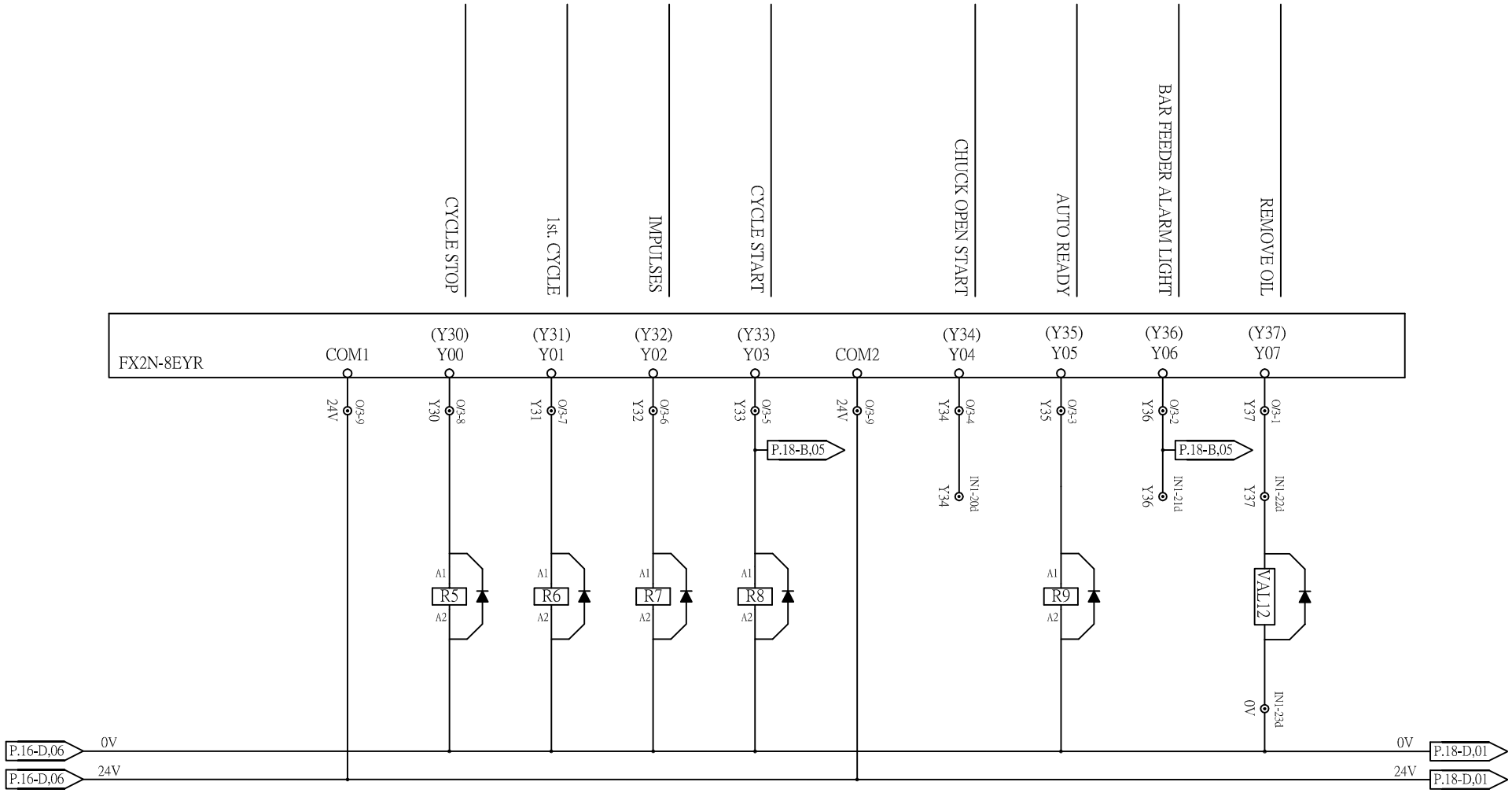
BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 13
LATHE NAME		DRAWN BY	CHECKED BY	DESCRIPTION: PLC output 2-4		
LATHE TYPE				DRAWING NO.: JV-CON054-EG		VERSION: B0

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC



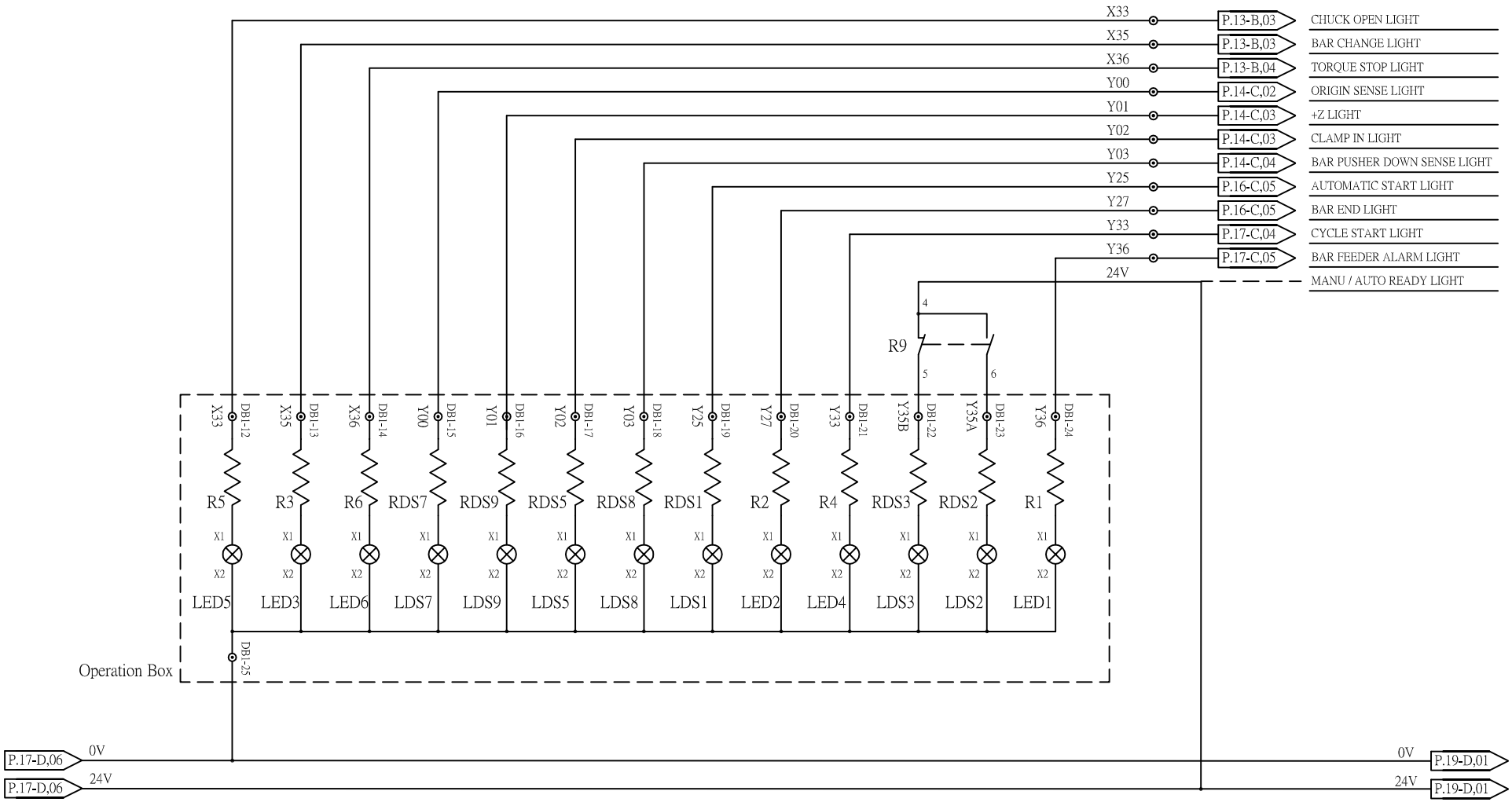
BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 14
LATHE NAME		DRAWN BY	CHECKED BY	DESCRIPTION: PLC output 3-4		
LATHE TYPE				DRAWING NO.: JV-CON054-EG		VERSION: B0

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC



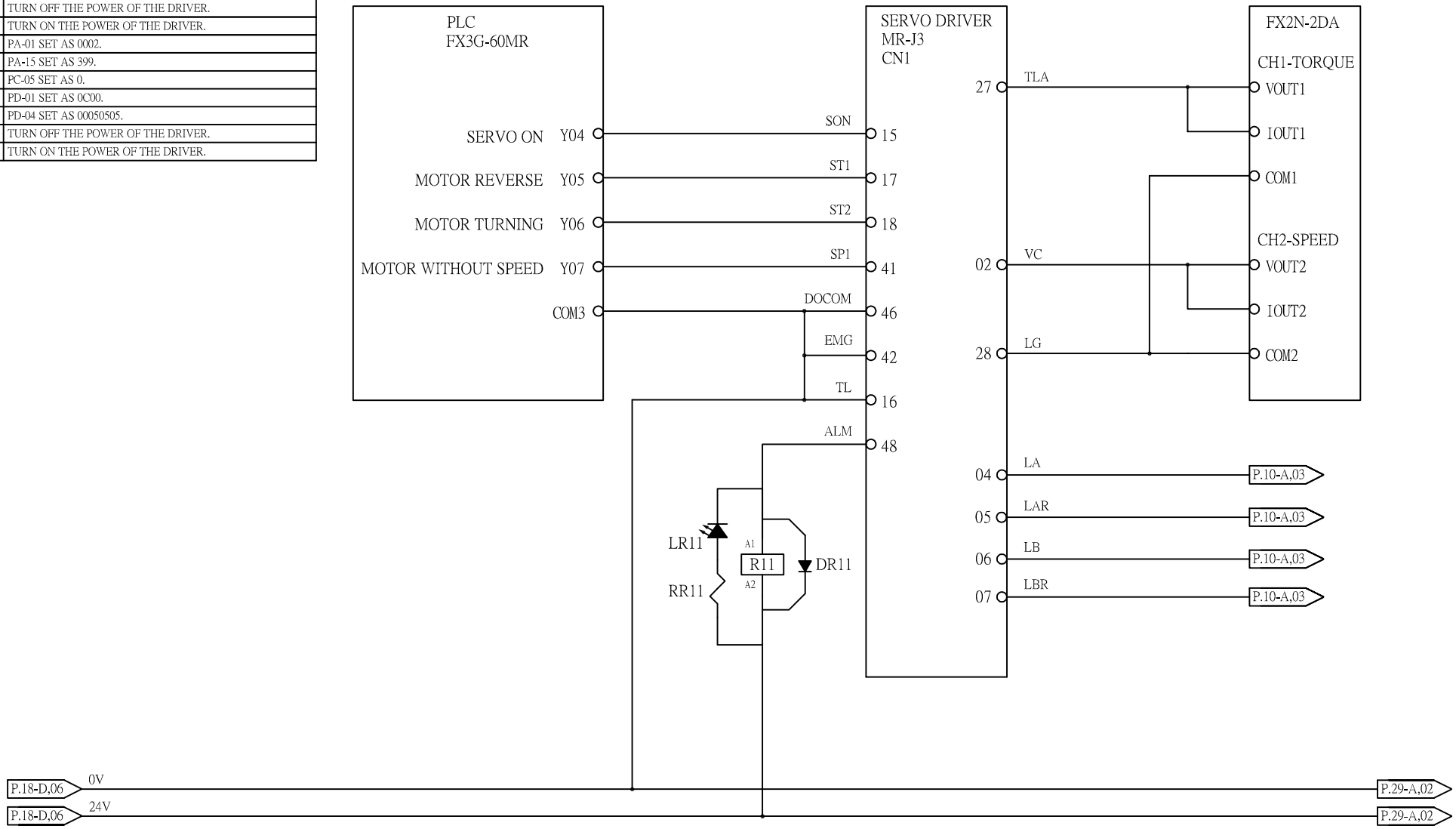
BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 15
LATHE NAME		DRAWN BY	CHECKED BY	DESCRIPTION: PLC output 4-4		
LATHE TYPE				DRAWING NO.: JV-CON054-EG		VERSION: B0

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC



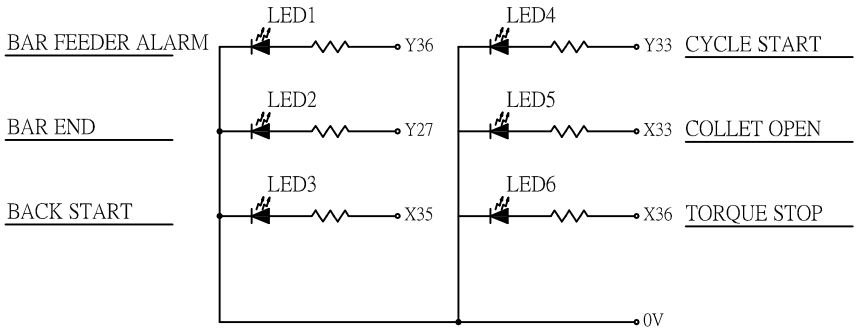
BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 16
LATHE NAME	EDGE TECHNOLOGIES A DIVISION OF HYDROMAT INC	DRAWN BY	CHECKED BY	DESCRIPTION: LED circuit of Remote control pendant		
LATHE TYPE				DRAWING NO.: JV-CON054-EG		VERSION: B0

NO.	SERVO DRIVER PARAMETER SETTING STEPS.
01	PA-19 SET AS 000C.
02	TURN OFF THE POWER OF THE DRIVER.
03	TURN ON THE POWER OF THE DRIVER.
04	PA-01 SET AS 0002.
05	PA-15 SET AS 399.
06	PC-05 SET AS 0.
07	PD-01 SET AS 0C00.
08	PD-04 SET AS 00050505.
09	TURN OFF THE POWER OF THE DRIVER.
10	TURN ON THE POWER OF THE DRIVER.

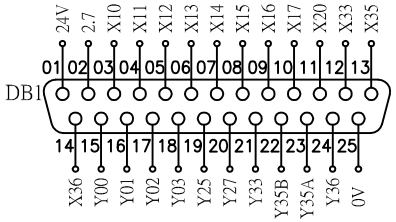


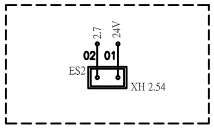
BAR FEEDER TYPE: PATRIOT / C-332 / M-542	FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 17	
LATHE NAME	DRAWN BY	CHECKED BY	DESCRIPTION: Driver circuit of Servo motor			
LATHE TYPE			DRAWING NO.: JV-CON054-EG		VERSION: B0	

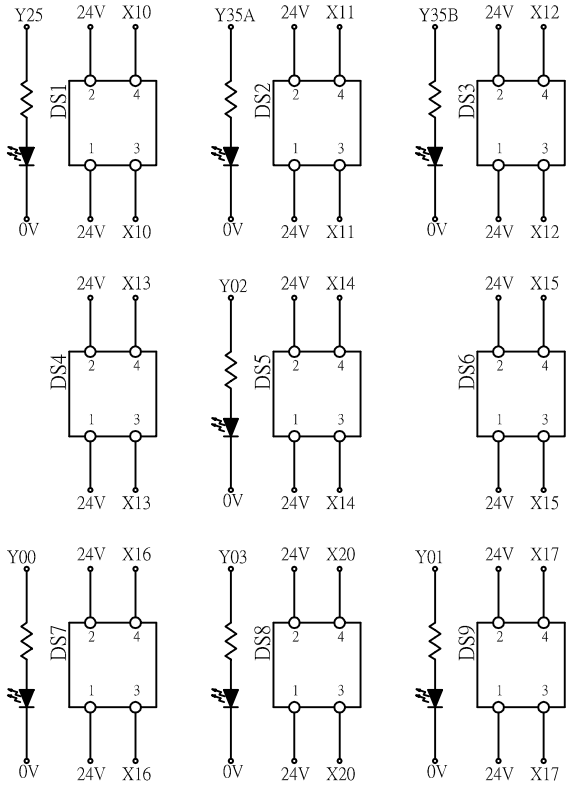
EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC



PCO 0201 KEY BOARD

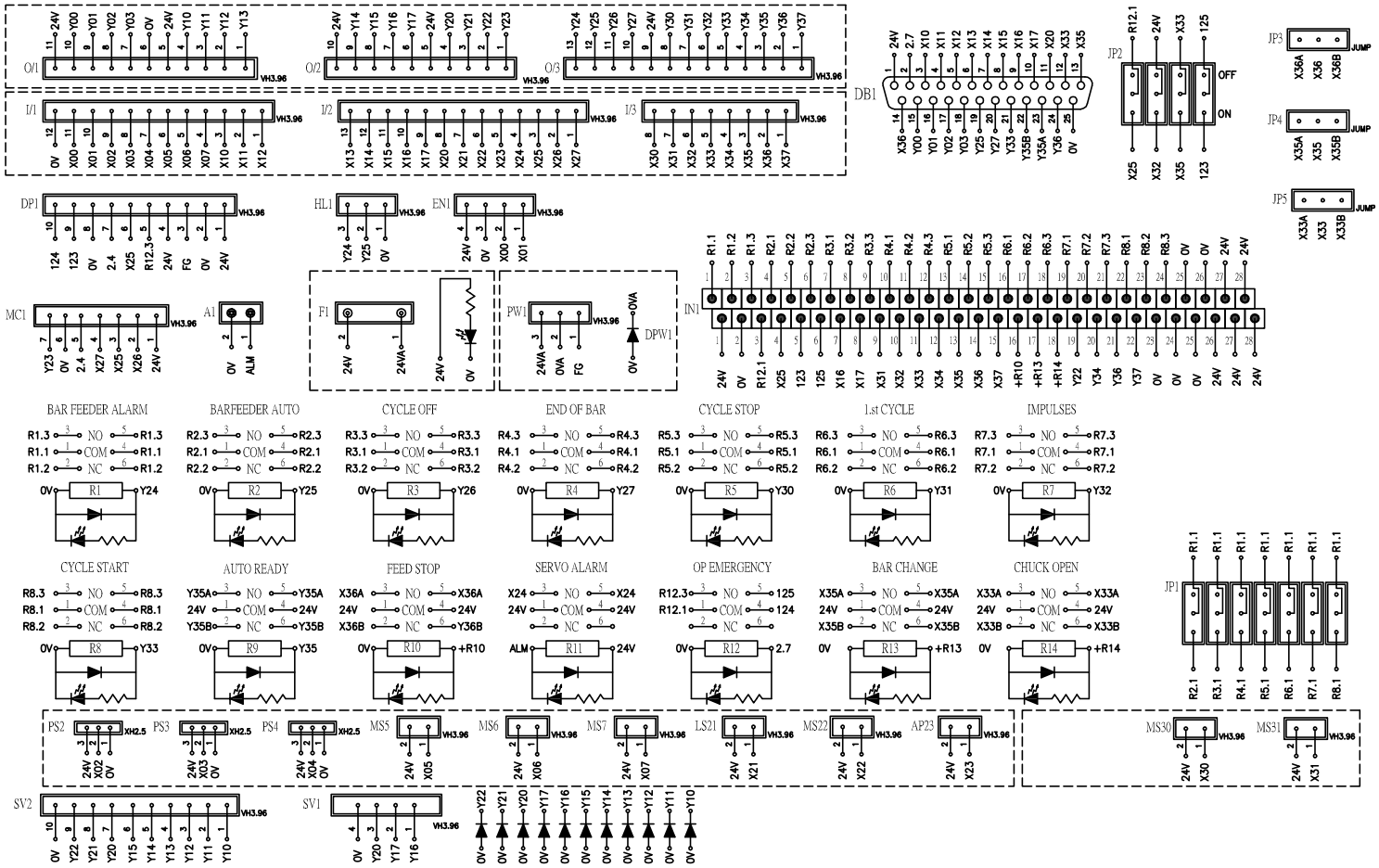






BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 18
LATHE NAME		DRAWN BY	CHECKED BY	DESCRIPTION: PC board circuit of Remote control pendant		
LATHE TYPE				DRAWING NO.: JV-CON054-EG		VERSION: B0

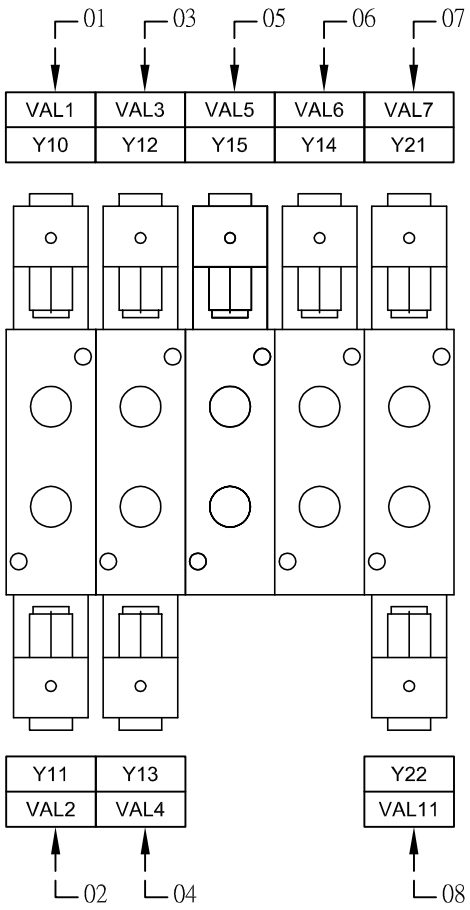
EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC



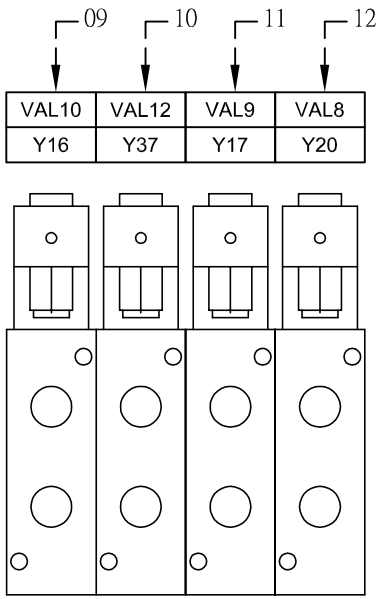
BAR FEEDER TYPE: PATRIOT / C-332 / M-542			FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 19
LATHE NAME	EDGE TECHNOLOGIES A DIVISION OF HYDROMAT INC		DRAWN BY	CHECKED BY	DESCRIPTION: Main PC board circuit		
LATHE TYPE					DRAWING NO.: JV-CON054-EG	VERSION: B0	

A4

SOLENOID VALVE DIAGRAM 1



SOLENOID VALVE DIAGRAM 2



NO.	PART NO.	CODE	NAME
01	A12120200	VAL1	BAR PUSHER RISE
02	A12120200	VAL2	BAR PUSHER DOWN
03	A12120200	VAL3	GUIDE CHANNEL FIX
04	A12120200	VAL4	GUIDE CHANNEL OPEN
05	A12120100	VAL5	CLAMPING
06	A12120100	VAL6	CLAMP IN
07	A12120200	VAL7	CLAMPING IN
08	A12120200	VAL11	CLAMPING OUT
09	A12120100	VAL10	SYNCHRONIZATION
10	A12120100	VAL12	REMOVE OIL
11	A12120100	VAL9	MOVEMABLE ANTI-VIBRATION
12	A12120100	VAL8	1nd ANTI-VIBRATION

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	PAGE
2014 / 06 / 10	2015 / 09 / 30	220 VAC 3-PHASE	24VDC	P. 20

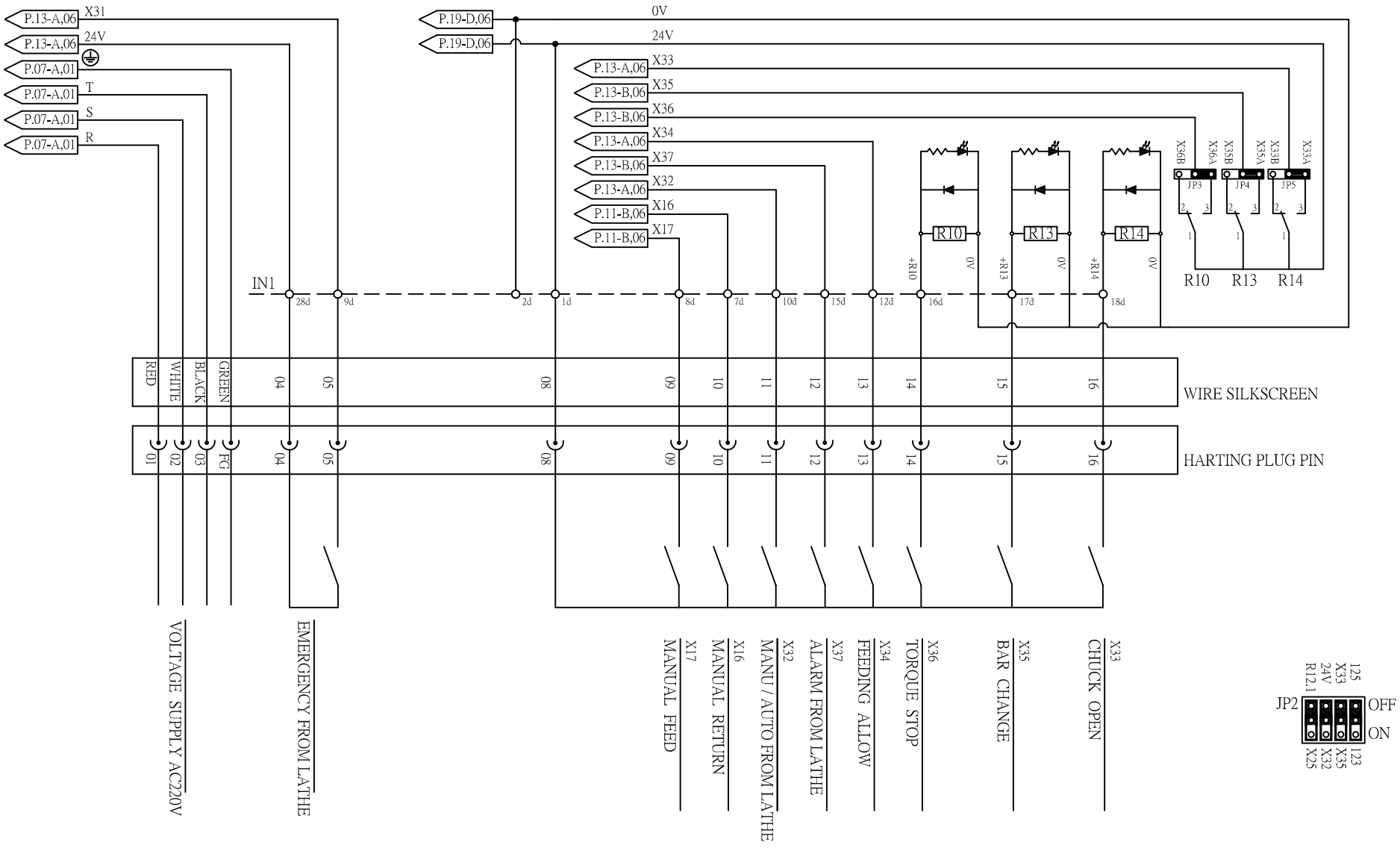
DRAWN BY:

CHECKED BY:

DESCRIPTION: Solenoid valves position

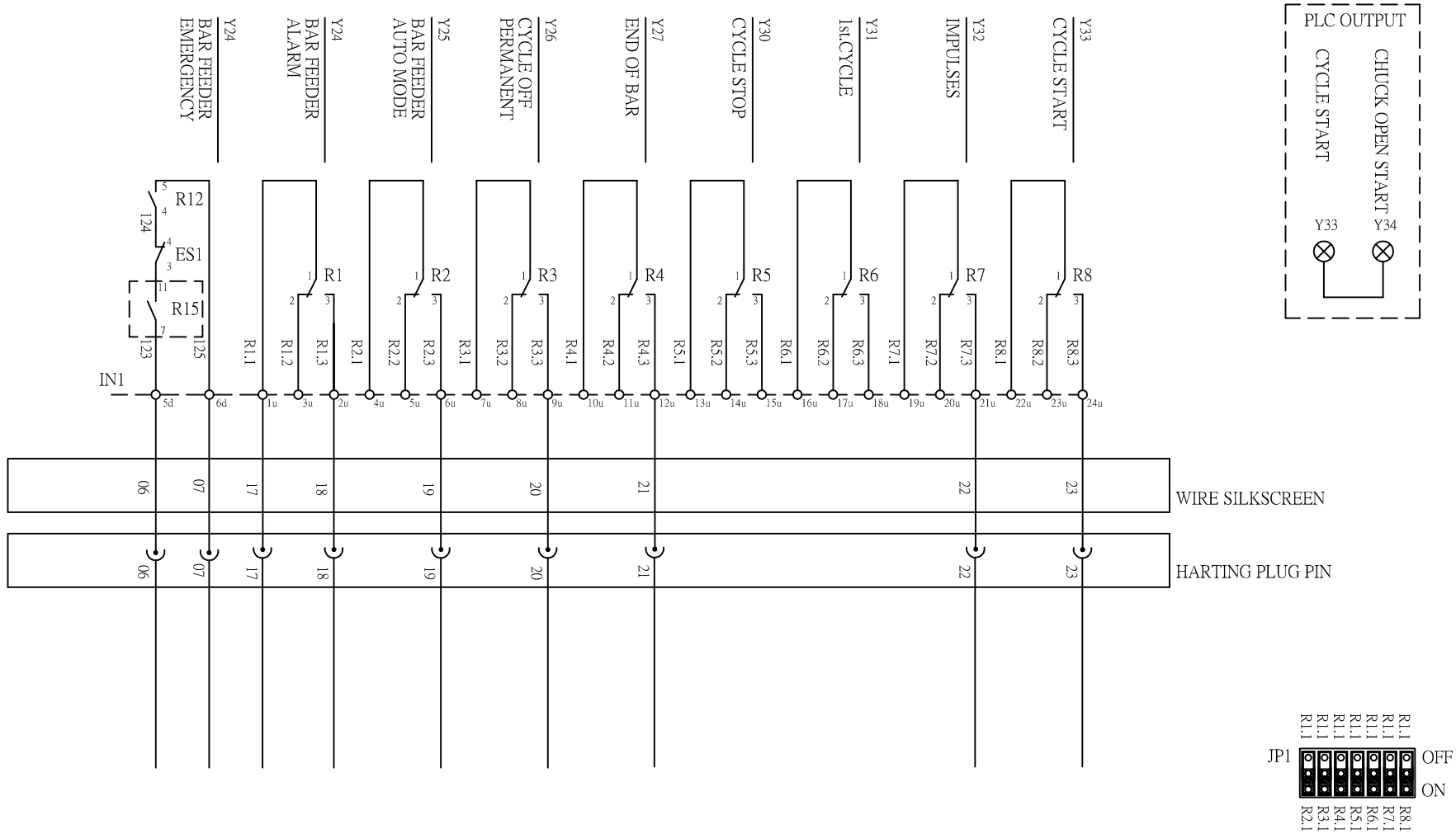
DRAWING NO.: JV-CON054-EG

VERSION: B0

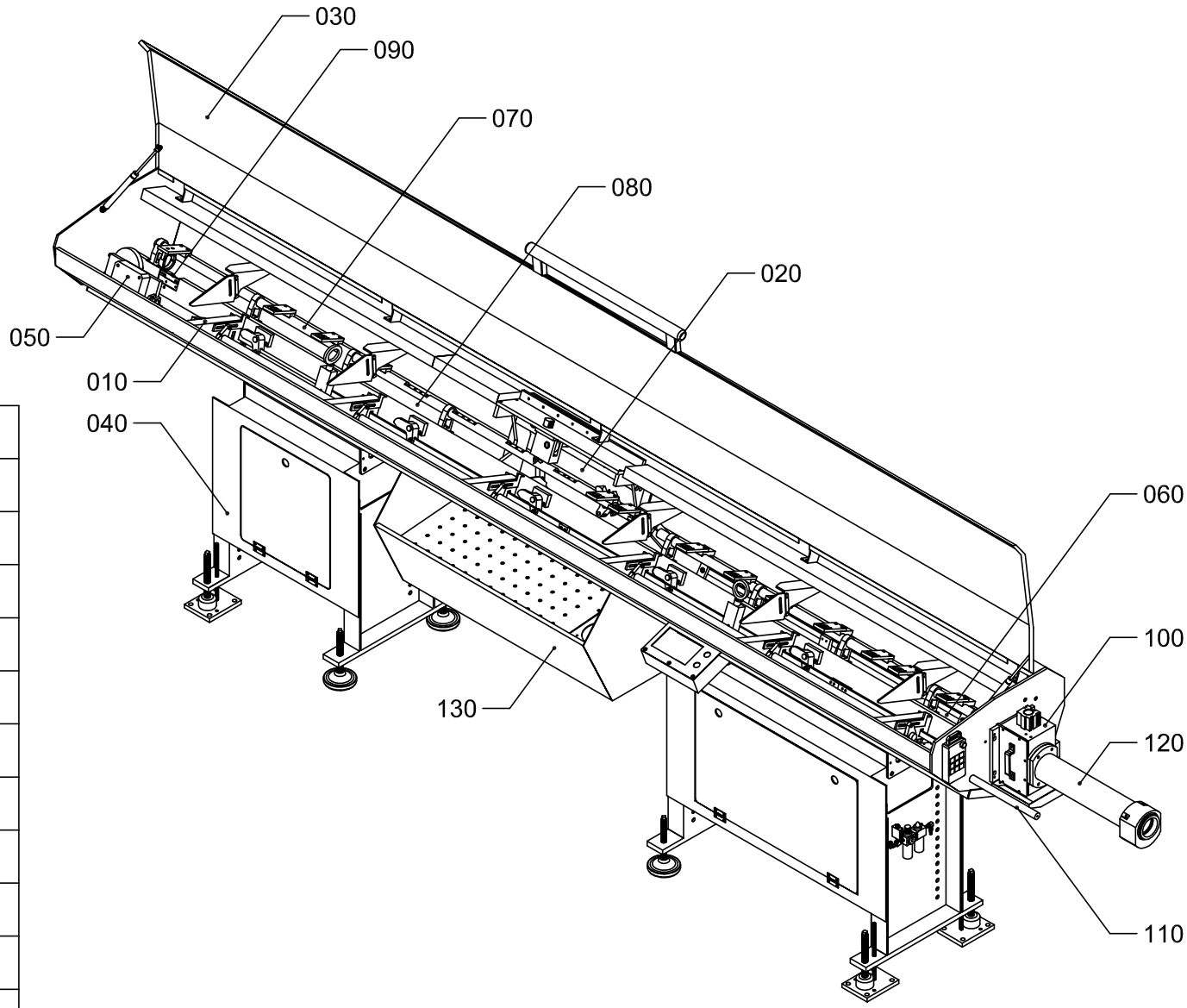


BAR FEEDER TYPE: PATRIOT / C-332 / M-542	FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 21
LATHE NAME	DRAWN BY	CHECKED BY	DESCRIPTION: Interface signal circuit 1-2		
LATHE TYPE			DRAWING NO.: JV-CON054-EG		VERSION: B0

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

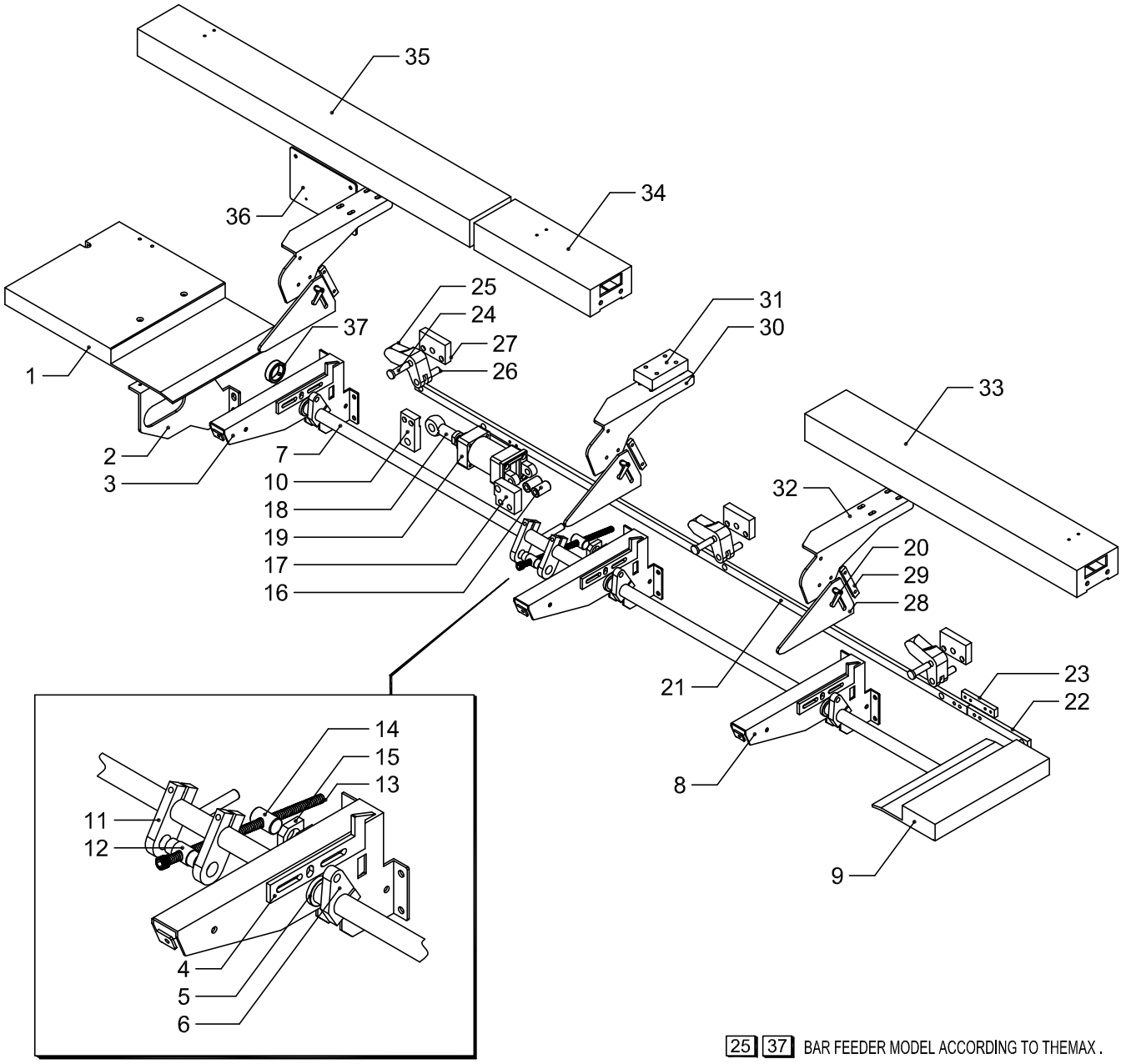


BAR FEEDER TYPE: PATRIOT / C-332 / M-542		FIRST DATE: 2014 / 06 / 10	REVISION DATE: 2015 / 09 / 30	MAIN VOLTAGE: 220 VAC 3-PHASE	SIGNAL VOLTAGE: 24VDC	PAGE: P. 22
LATHE NAME:	EDGE TECHNOLOGIES A DIVISION OF HYDROMAT INC	DRAWN BY:	CHECKED BY:	DESCRIPTION: Interface signal circuit 2-2		
LATHE TYPE:				DRAWING NO.: JV-CON054-EG		VERSION: B0



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

N.	Code	QTY		Denomination
		25	37	
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
25 / 37	AV51MA1625 / AV51MA1637	1	1	Bar L=2160 / Bar L=3400
8	AV51MA0120	1	1	Support
9	AV51MA2400	1	1	Support
10	AV51MA0800	1	1	Anchor
11	AV51MA1100	2	2	Plate
12	AV51MA1200	1	1	Arbor
13	ZS011212001	1	1	Cap screw
14	AV51MA1700	1	1	Arbor
15	AV51MA0700	1	1	Anchor
16	AV51MA0901	2	2	Support
17	AV51MA0900	1	1	Support
18	BPHS16	1	1	Joint
19	A11150500	1	1	Cylinder SC-63x25-CB
20	AV51MA2600	5	6	Adjustable handle
25 / 37	AV51MA1025 / AV51MA1032	1	1	Pull rod / Pull rod
37	AV51MA1037		1	Pull rod
37	AV51MA1001		1	Connector rod
24	AV51MA0600	5	6	Arbor
25	AV51MA0500	5	6	Hook
26	AV51MA0601	5	6	Lever
27	AV51MA0400	5	6	Support
28	AV51MA1400	5	6	Plate
29	AV51MA1500	5	6	Leaf
30	AV51MA1301	1	1	Plate
31	AV51MA1302	1	1	Shim
32	AV51MA1300	4	5	Plate
25 / 37	AV51MA2030 / AV51MA2000	1	1	Tube L=688 / Tube L=1888
34	AV51MA2100	1	1	Tube L=328
35	AV51MA1900	1	1	Tube L=1398
36	AV51MA2700	1	1	Plate
37	AV51MA3100	1	1	Ring



25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

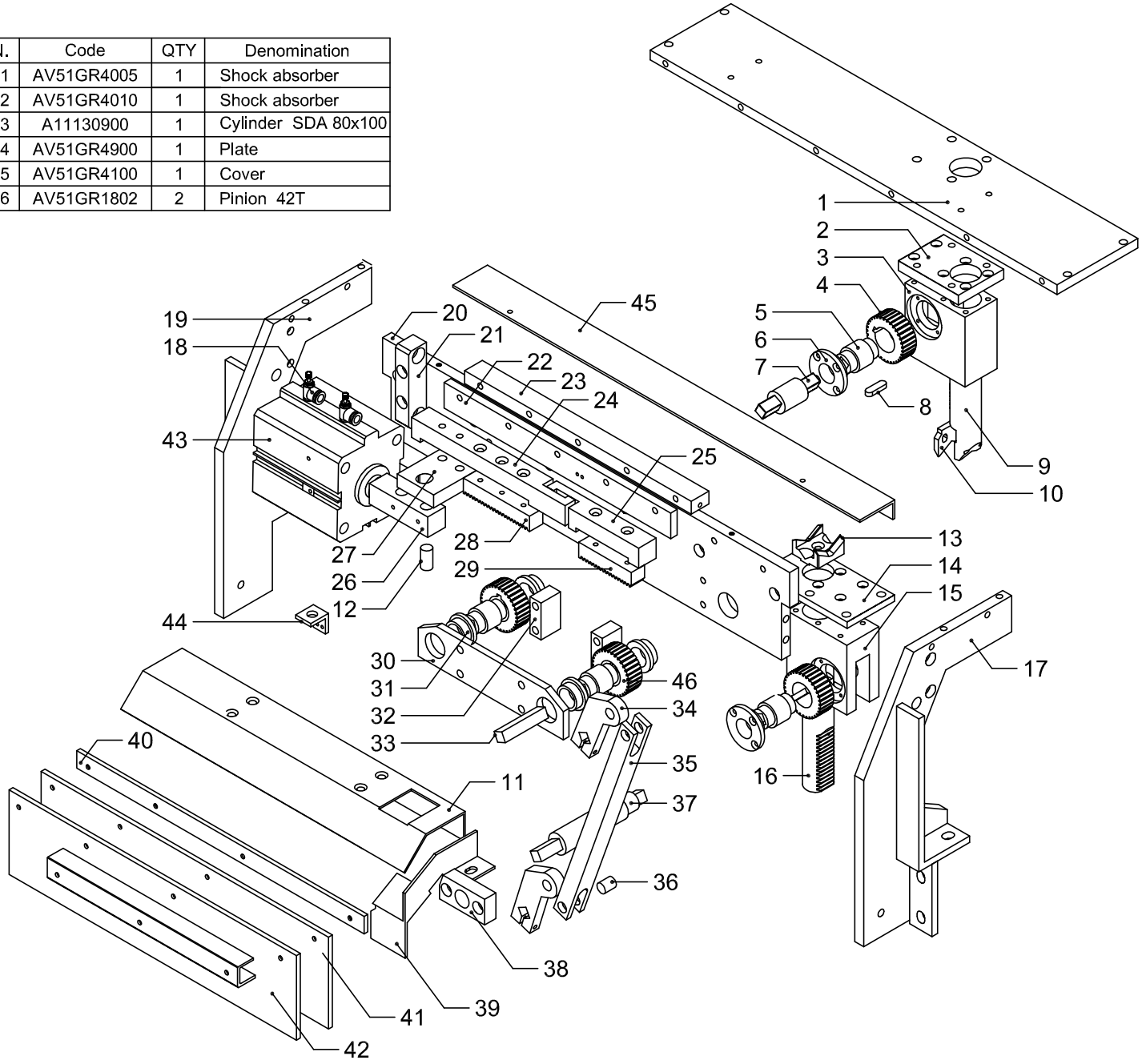
PATRIOT

FRAME DEVICE

Tab. 010 7

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	Shock absorber

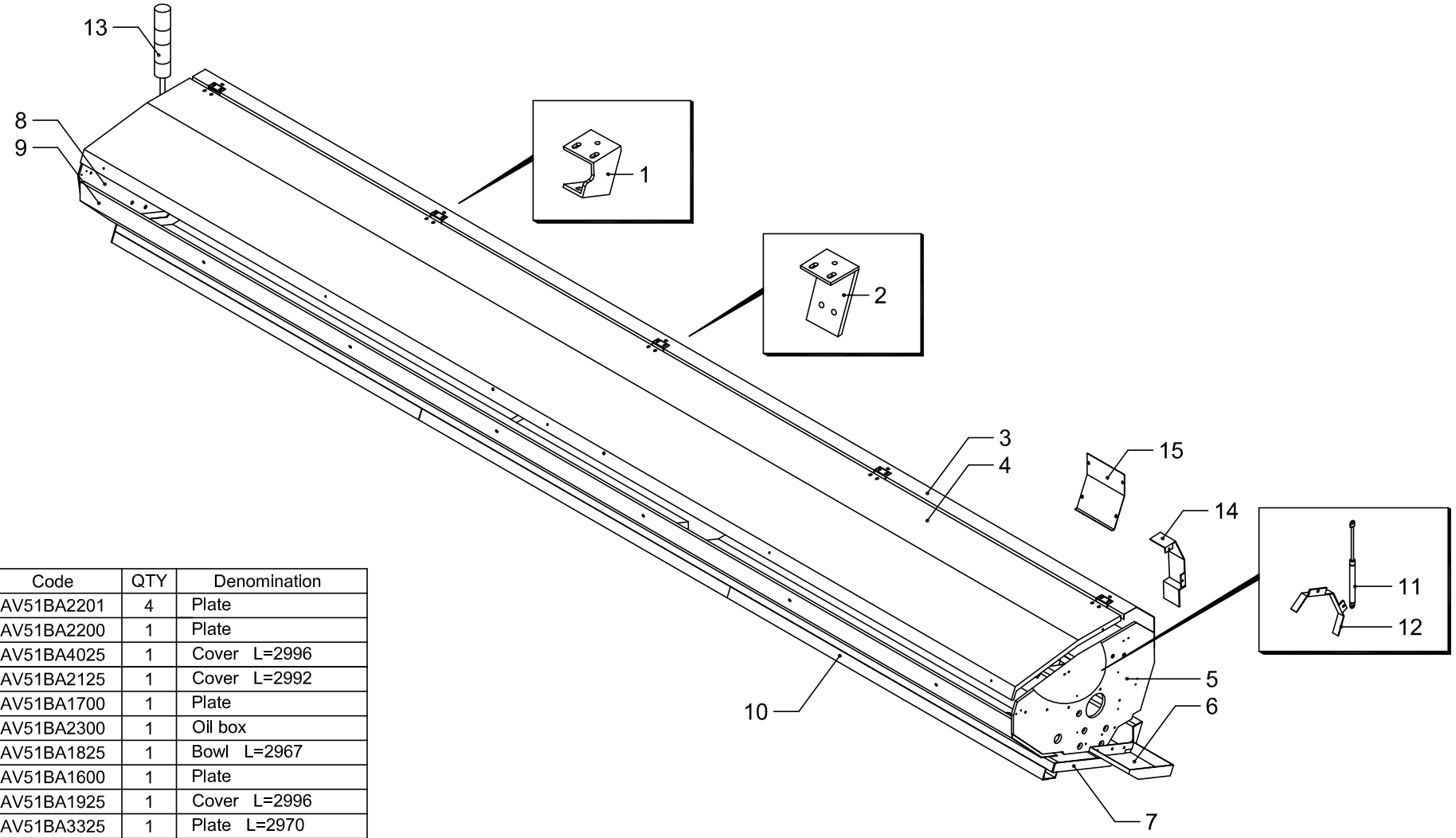
N.	Code	QTY	Denomination
41	AV51GR4005	1	Shock absorber
42	AV51GR4010	1	Shock absorber
43	A11130900	1	Cylinder SDA 80x100
44	AV51GR4900	1	Plate
45	AV51GR4100	1	Cover
46	AV51GR1802	2	Pinion 42T



PATRIOT

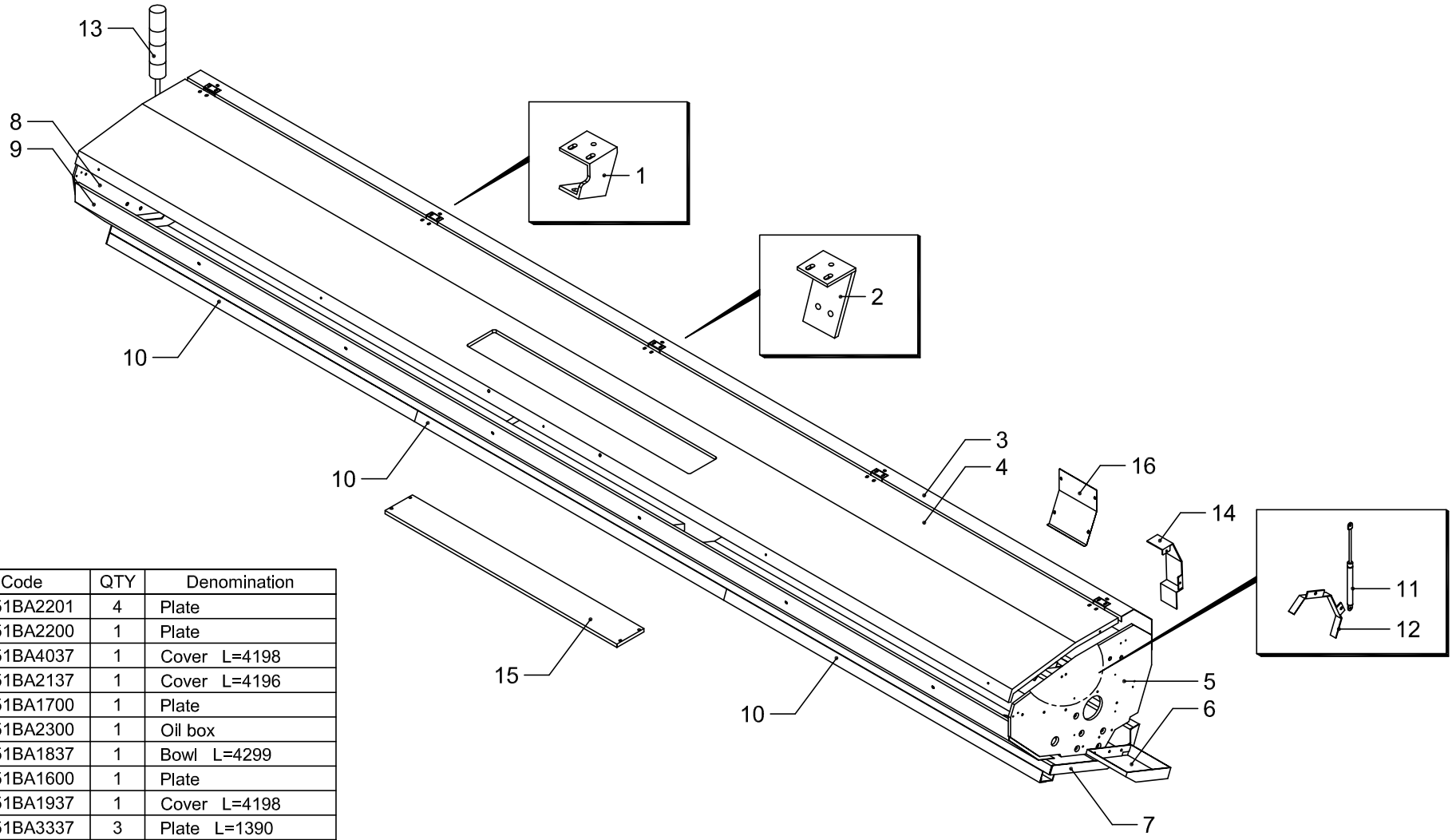
CLAMPING

Tab. 020 6



N.	Code	QTY	Denomination
1	AV51BA2201	4	Plate
2	AV51BA2200	1	Plate
3	AV51BA4025	1	Cover L=2996
4	AV51BA2125	1	Cover L=2992
5	AV51BA1700	1	Plate
6	AV51BA2300	1	Oil box
7	AV51BA1825	1	Bowl L=2967
8	AV51BA1600	1	Plate
9	AV51BA1925	1	Cover L=2996
10	AV51BA3325	1	Plate L=2970
11	AV51BA3810	2	Spring KS-115-288-150KG-20-AF
12	AV51BA3400	1	Profile
13	J630101	1	Luminous indicator unit
14	AV51BA3700	1	Profile
15	AV51BA4100	2	Access Panel

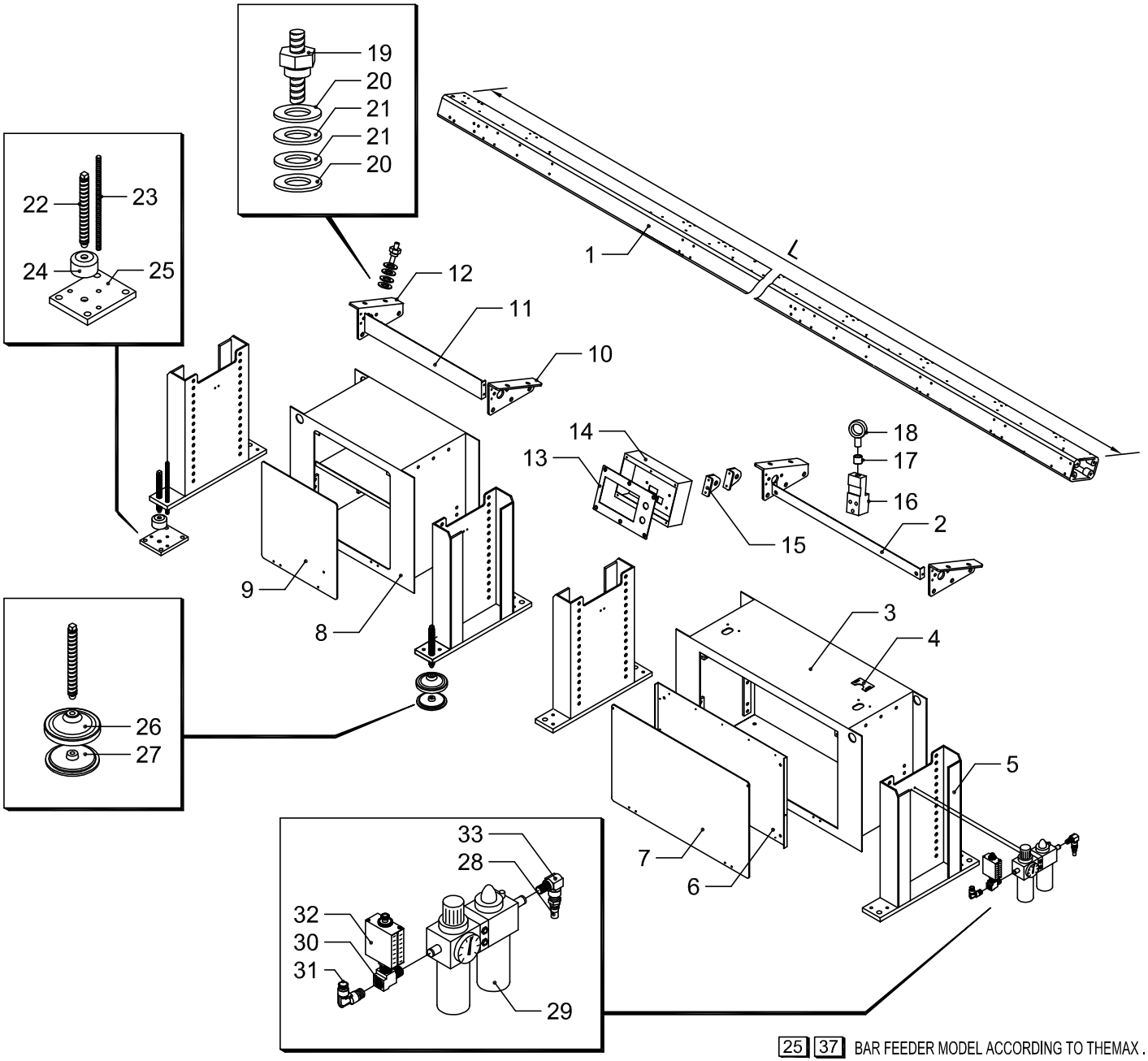
25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .



N.	Code	QTY	Denomination
1	AV51BA2201	4	Plate
2	AV51BA2200	1	Plate
3	AV51BA4037	1	Cover L=4198
4	AV51BA2137	1	Cover L=4196
5	AV51BA1700	1	Plate
6	AV51BA2300	1	Oil box
7	AV51BA1837	1	Bowl L=4299
8	AV51BA1600	1	Plate
9	AV51BA1937	1	Cover L=4198
10	AV51BA3337	3	Plate L=1390
11	AV51BA3810	2	Spring KS-115-288-150KG-20-AF
12	AV51BA3400	1	Profile
13	J630101	1	Luminous indicator unit
14	AV51BA3700	1	Profile
15	AV51BA2103	1	Plexiglass window
16	AV51BA4100	2	Access Panel

25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

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	Base
9	AV51BA0501	1	Door
10	AV51BA0600	2	Support
11	AV51BA0702	1	Cover
12	AV51BA0700	2	Support
13	AV51BA2800	1	Key-board
14	AV51BA2500	1	Housing
15	AV51BA2600	2	Support
16	AV51BA2900	2	Support
17	AV51BA3301	2	Bushing
18	AV51BA3300	2	Eyebolt
19	AV51BA0800	14	Column
20	AV51BA0900	28	Washer
21	AV51BA1000	28	Washer
22	AV51BA1400	8	Screw
23	AV51BA1500	4	Tie rod
24	AV51BA1200	4	Plate
25	AV51BA1100	4	Plate
26	AV51BA3000	4	Plug
27	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"



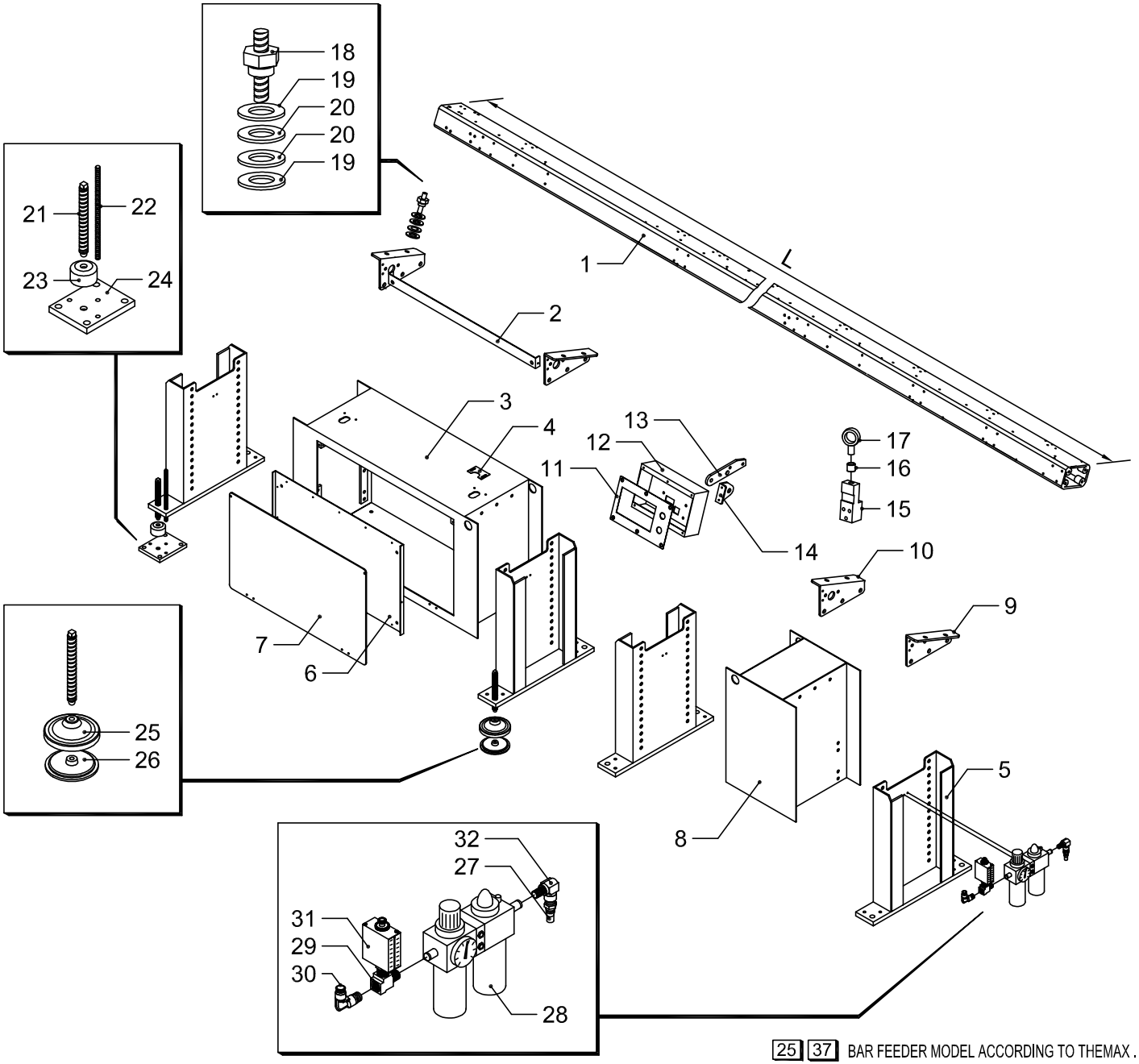
25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

PATRIOT

BASES AND BEAM 37

Tab. 040 7

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"



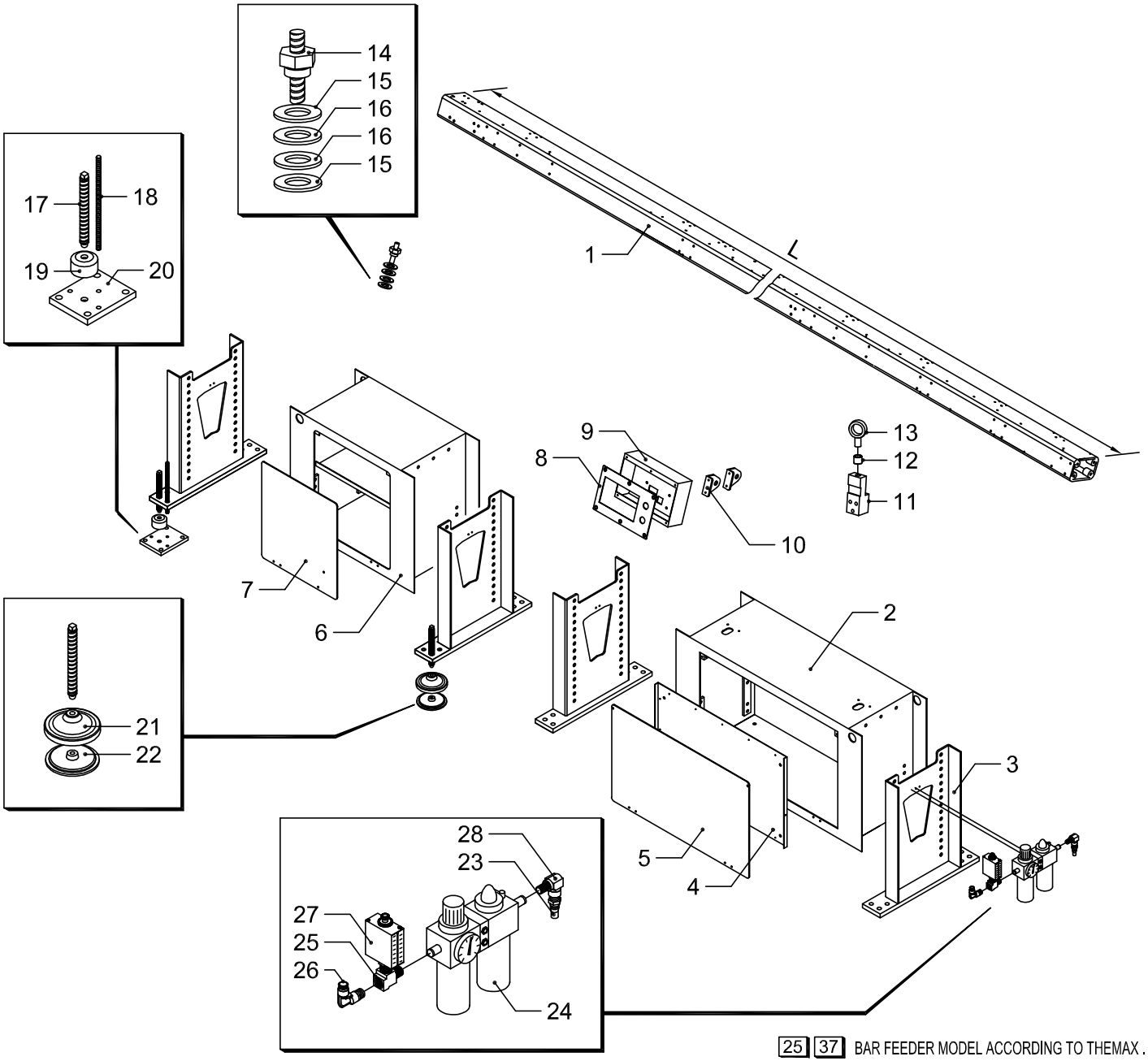
25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

PATRIOT

BASES AND BEAM 25

Tab. 041 2

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	Base
7	AV51BA0501	1	Door
8	AV51BA2800	1	Key-board
9	AV51BA2500	1	Housing
10	AV51BA2600	2	Support
11	AV51BA2900	2	Support
12	AV51BA3301	2	Bushing
13	AV51BA3300	2	Eyebolt
14	AV51BA0800	14	Column
15	AV51BA0900	28	Washer
16	AV51BA1000	28	Washer
17	AV51BA1400	8	Screw
18	AV51BA1500	4	Tie rod
19	AV51BA1200	4	Plate
20	AV51BA1100	4	Plate
21	AV51BA3000	4	Plug
22	AV51BA3100	4	Plug
23	AB110300	1	Joint
24	A12110300	1	Pneumatically-actuated electrical microswitch PM-20
25	A15140200	1	Connection 1/4"
26	A13120500	1	Connection 1/4"xø8
27	A12140400	1	Pressure switch
28	A17110300	1	90° Connection 1/4"x1/4"

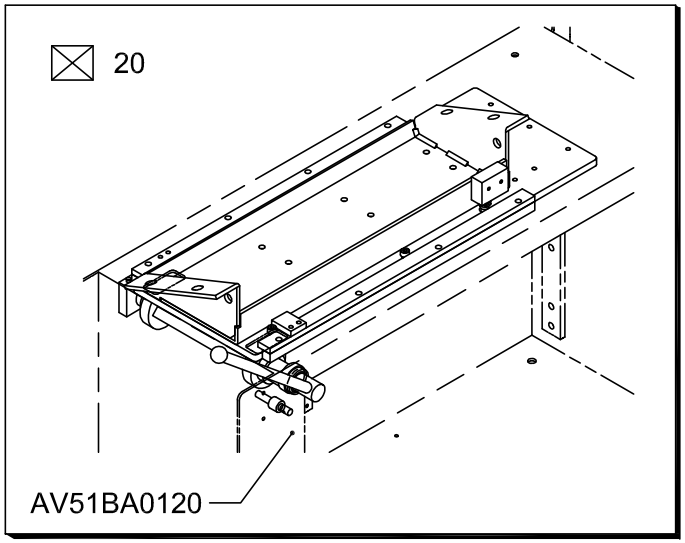


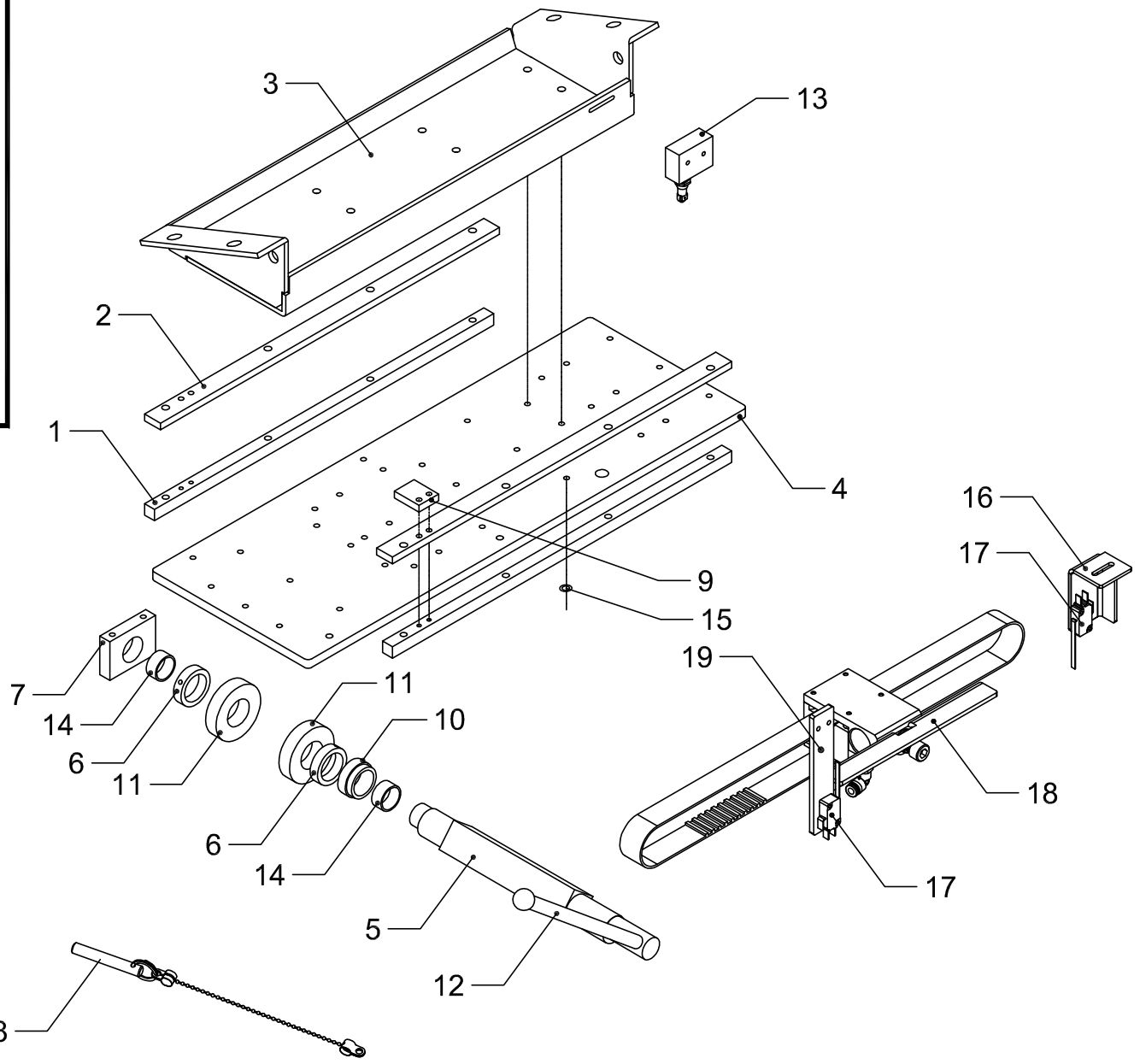
25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

PATRIOT

BASES AND BEAM (TRACKING SYSTEM) 37

Tab. 043 1



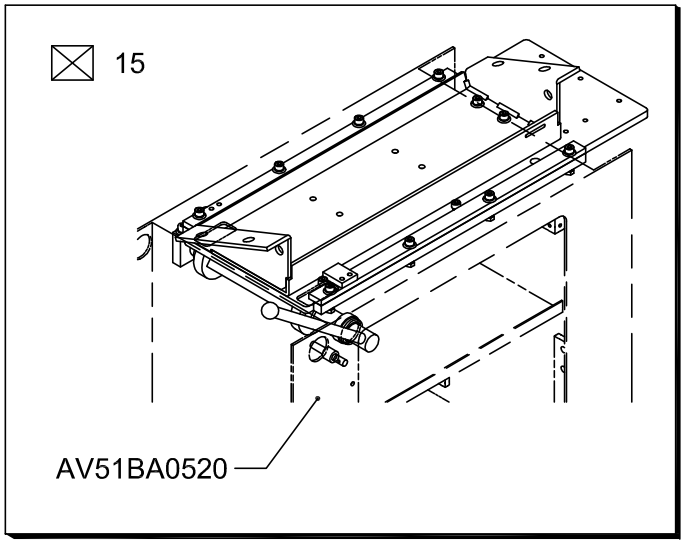


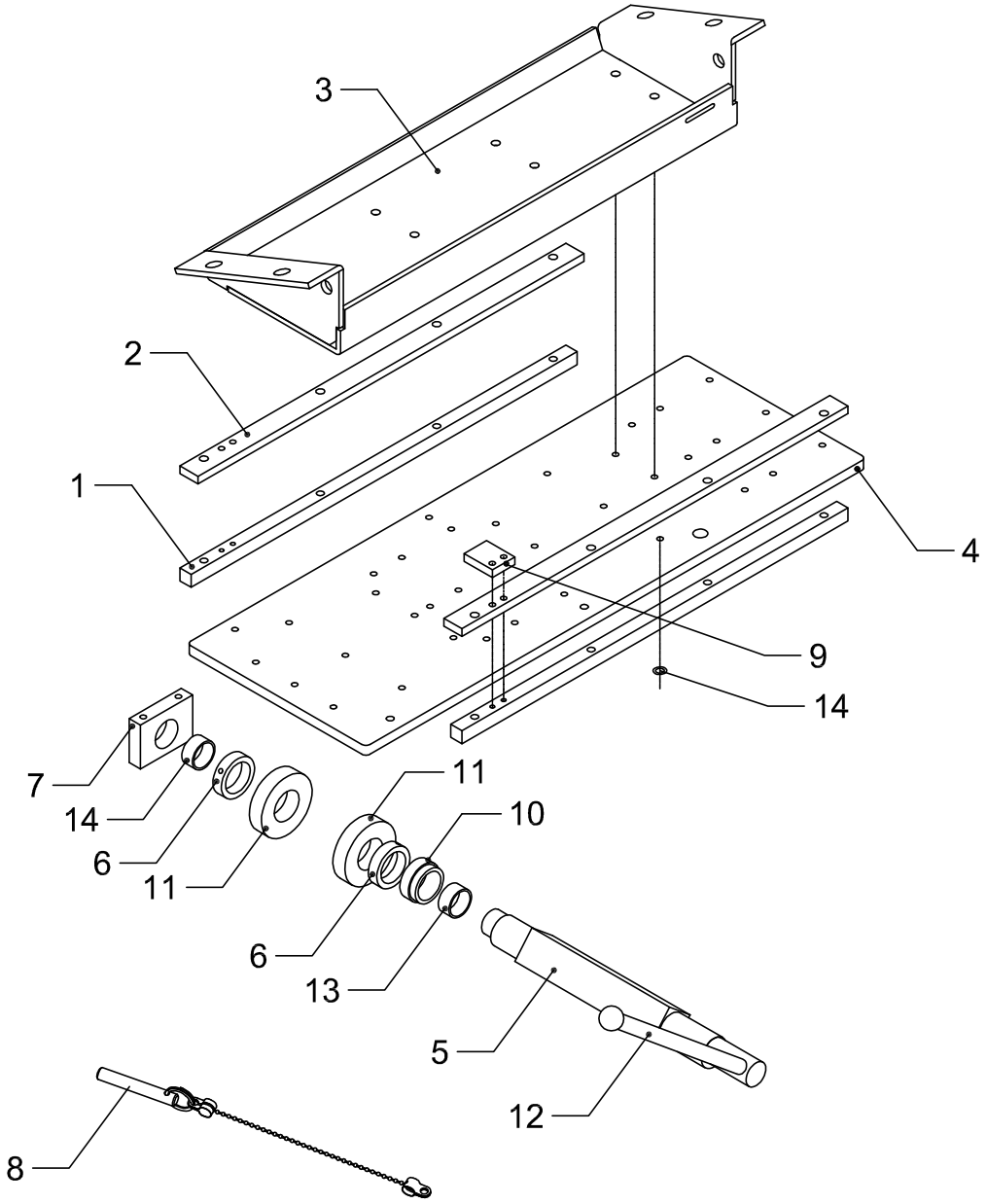
N.	Code	QTY	Denomination
1	AV51MZ0200	2	Plate
2	AV51MZ0300	2	Support
3	AV51MZ0400	1	Plate
4	AV51MZ0500	1	Plate
5	AV51MZ0600	1	Arbor
6	AV51MZ0700	2	Ring
7	AV51MZ0800	1	Block
8	AV51MZ000B	1	Bolt
9	AV51MZ1000	1	Anchor
10	AV51BA0810	1	Bushing
11	B6207ZZ	2	Bearing
12	P35201200	1	Handle 1160-M14-250
13	J310409	1	Microswitch TZ-7311
14	BSF2815	2	Bearing SF-2815
15	IEN0813001	6	Gasket (S8)
16	ADP779810028	1	Support
17	J310419	2	Microswitch V-15-1A5
18	ADP779810026	1	Support
19	ADP779810027	1	Support
20	AV51MZ004A	1	Axial tracking system

PATRIOT

AXIAL TRACKING SYSTEM (MOVABIE RIGHT)

Tab. 046 1





N.	Code	QTY	Denomination
1	AV51MZ0200	2	Plate
2	AV51MZ0300	2	Support
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	P35201200	1	Handle 1160-M14-250
13	BSF2815	2	Bearing SF-2815
14	IEN0813001	6	Gasket (S8)
15	AV51MZ001A	1	Axial tracking system

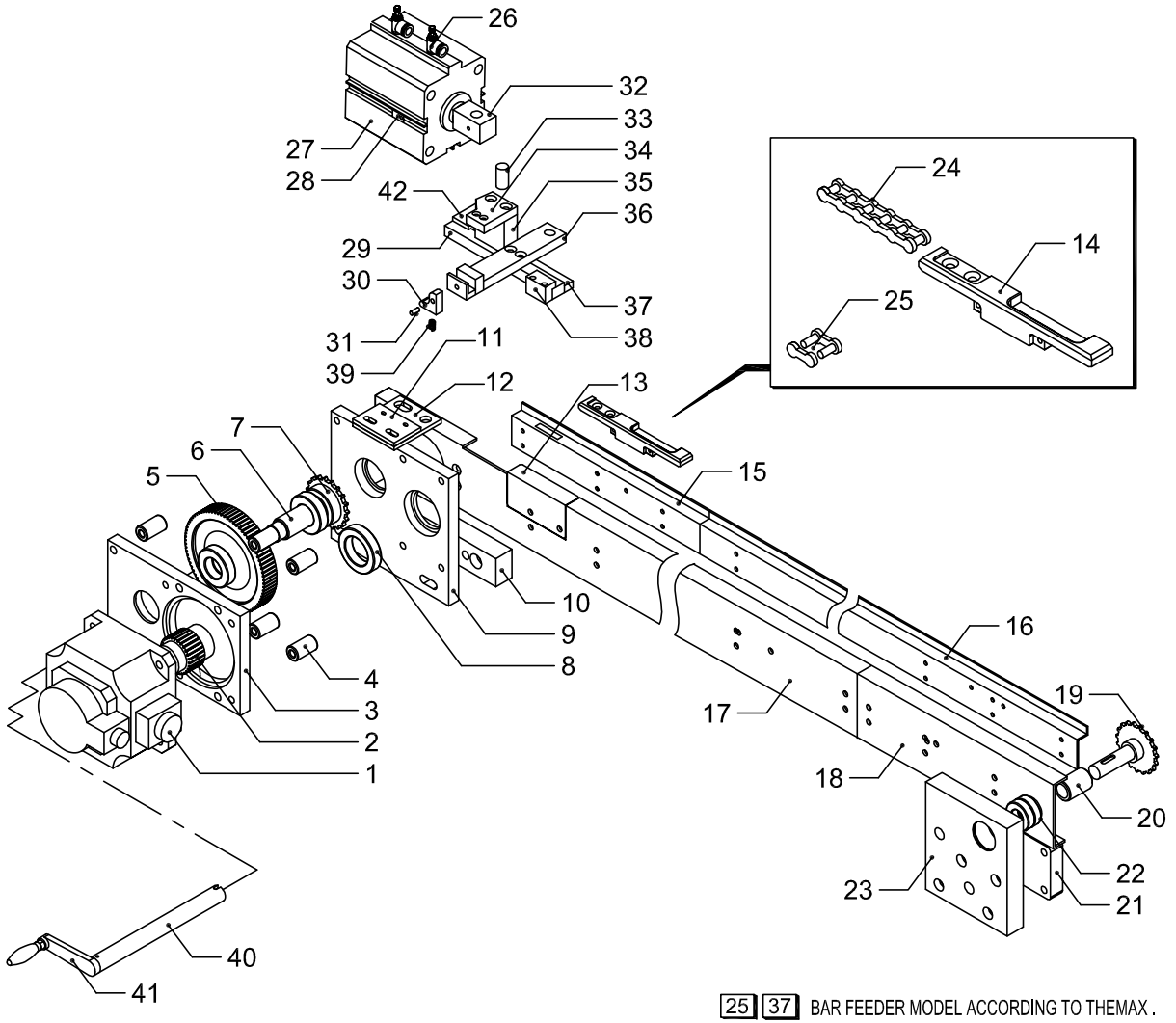
PATRIOT

AXIAL TRACKING SYSTEM (MOVABIE LEFT)

Tab. 047 1

N.	Code	QTY 25	QTY 37	Denomination
1	J221502	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		Bracket
12	AV51DR1402	1		Bracket
13	AV51DR1300	1		Plate
14	AV51DR1200	1		Bar pusher bracket
15	AV51DR1100		1	Chain guide L=1094
25 16	AV51DR1103	1		Chain guide L=2830
37 16	AV51DR1101		1	Chain guide L=2925
17	AV51DR1000		1	Chain guide L=2980
25 18	AV51DR1003	1		Chain guide L=2996
37 18	AV51DR1001		1	Chain guide L=1215
19	AV51DR0700	1		Sprocket 39T
20	AV51DR0900	1		Spacer
21	AV51DR0801	1		Support
22	B6003ZZ	2		Bearing
23	AV51DR0800	1		Support
25 24	AV51DR1601	1		Chain L=617P
37 24	AV51DR1700		1	Chain 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		Connecting block
33	AV51CH1701	1		Pillar
34	AV51GR4600	1		Extensive block
35	AV51GR4300	1		Push block
36	AV51GR4400	1		Balance 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

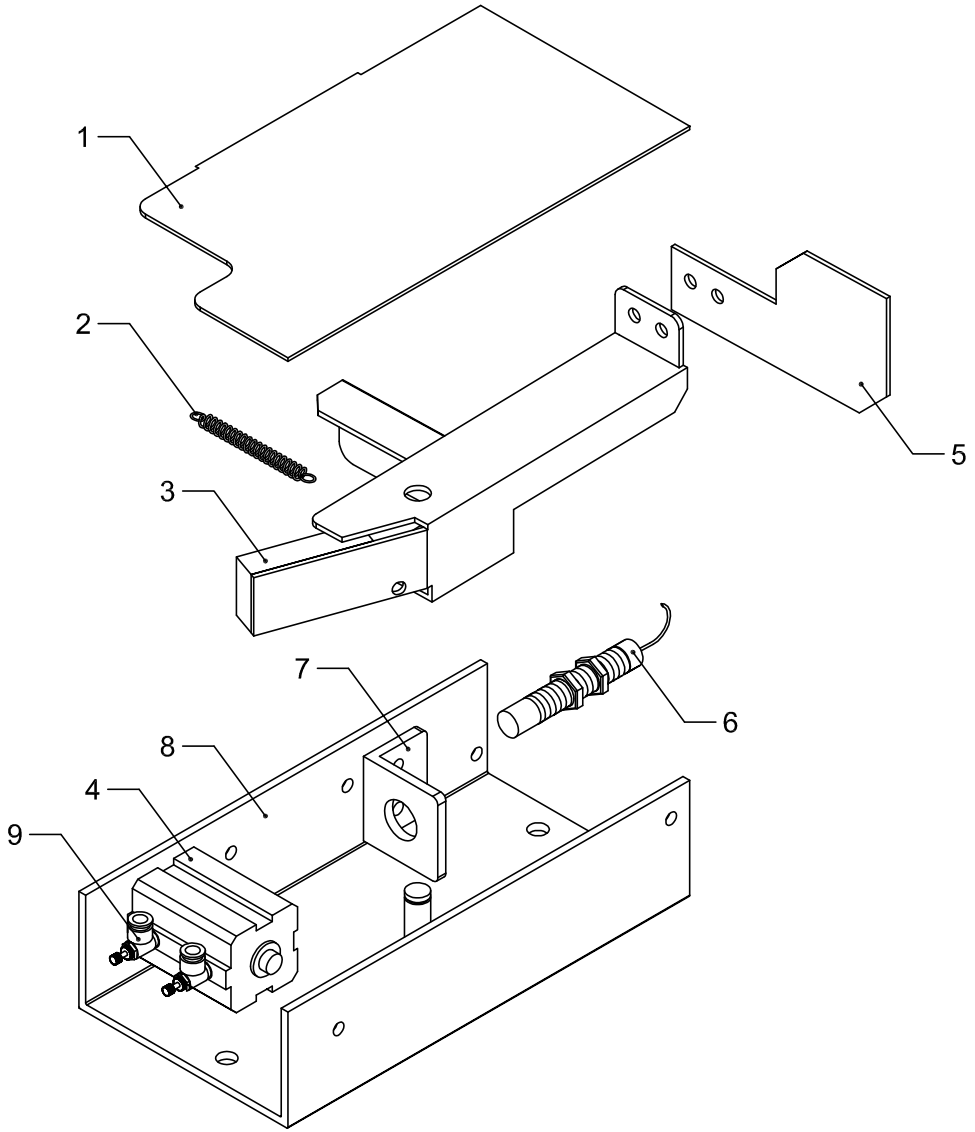


25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

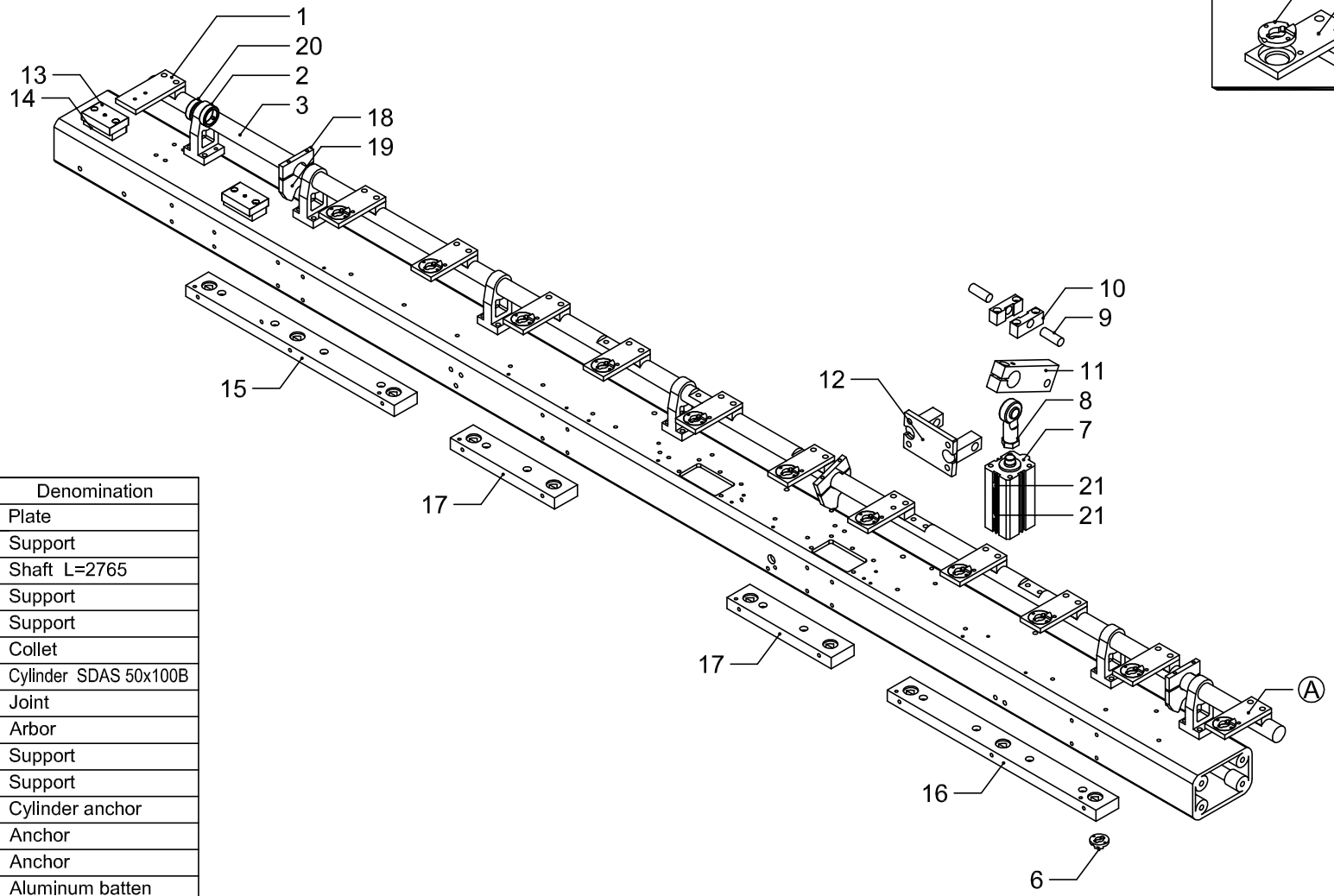
PATRIOT

FEED MOTOR DRIVE

Tab. 050 10



N.	Code	QTY	Denomination
1	AV51FA0500	1	Cover
2	G92120600	1	Spring
3	AV51FA0200	1	Short feed door
4	A11130700	1	Cylinder SDA12*15
5	AV51FA0300	1	Flag
6	J310313	1	Microswitch
7	AV51FA0400	1	Bracket
8	AV51FA0100	1	Housing
9	A12130300	2	Flow regulator JSC 6-M5



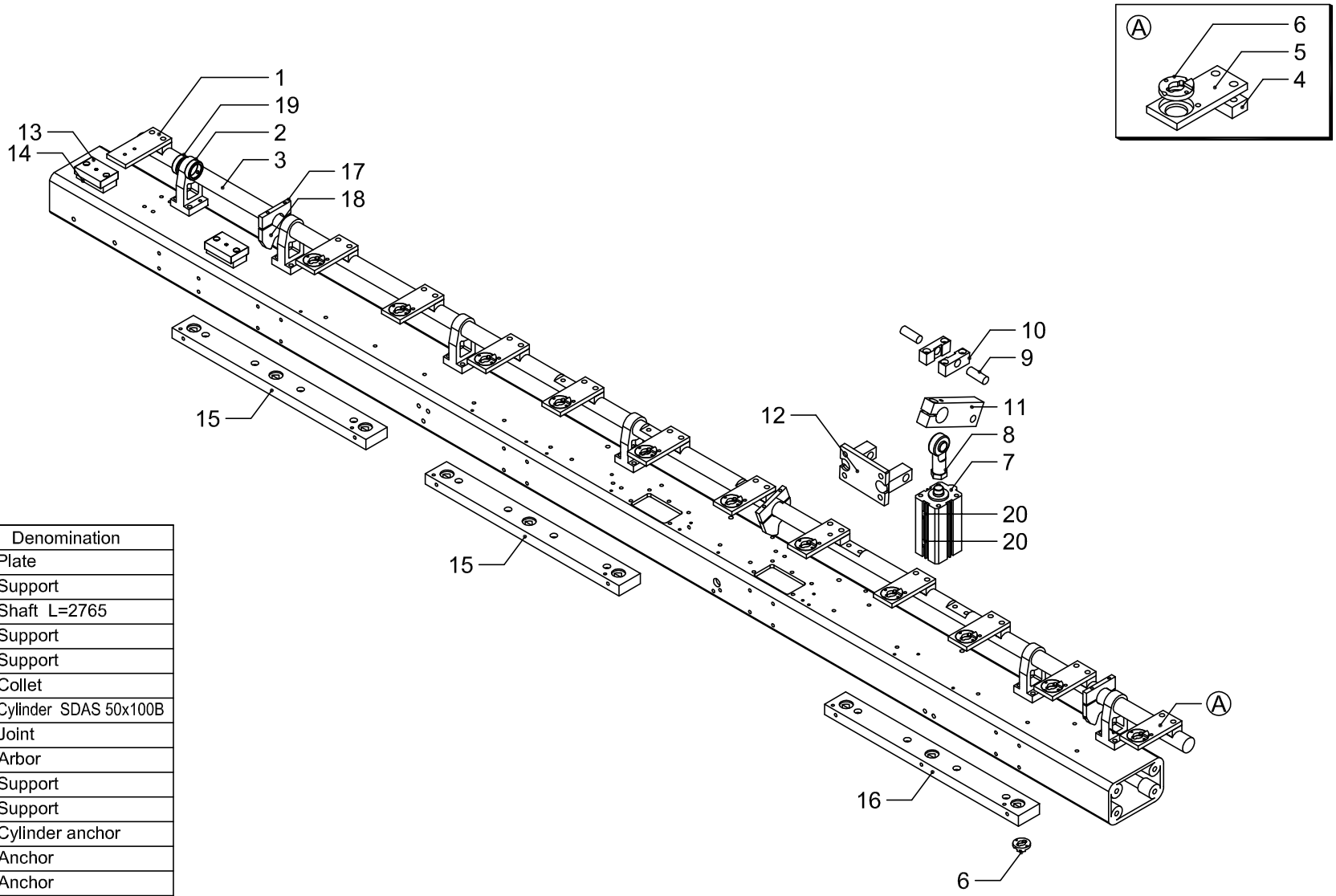
N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	7	Support
3	AV51CH1525	1	Shaft L=2765
4	AV51CH0900	12	Support
5	AV51CH0700	11	Support
6	AV51CH0800	21	Collet
7	A11130600	1	Cylinder SDAS 50x100B
8	BPHS18	1	Joint
9	AV51CH1701	2	Arbor
10	AV51CH1700	2	Support
11	AV51CH1900	1	Support
12	AV51CH1800	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

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

PATRIOT

GUIDE CHANNEL SUPPORT 25 L

Tab. 070 2



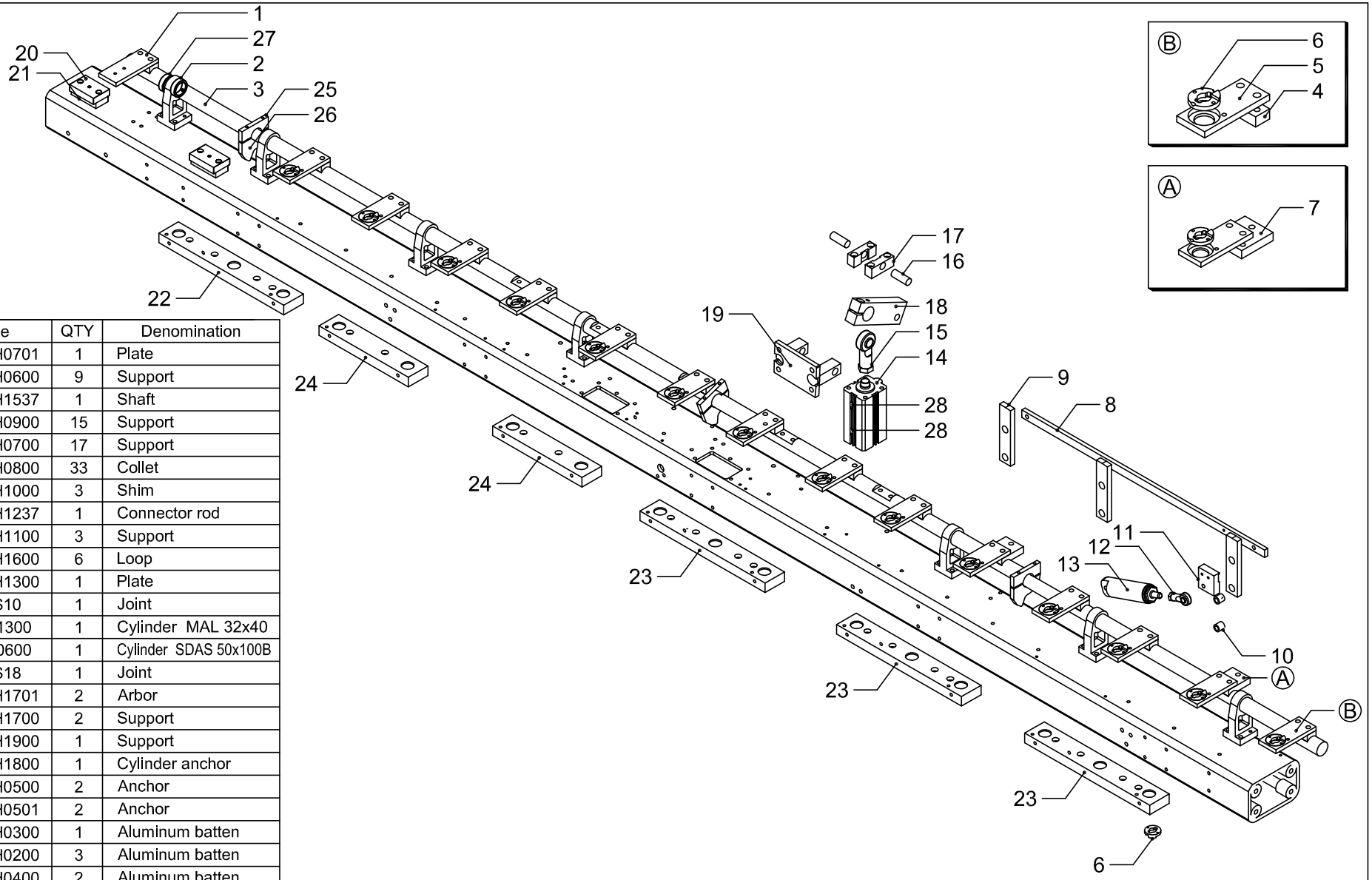
N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	7	Support
3	AV51CH1525	1	Shaft L=2765
4	AV51CH0900	12	Support
5	AV51CH0700	11	Support
6	AV51CH0800	20	Collet
7	A11130600	1	Cylinder SDAS 50x100B
8	BPHS18	1	Joint
9	AV51CH1701	2	Arbor
10	AV51CH1700	2	Support
11	AV51CH1900	1	Support
12	AV51CH1800	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

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

PATRIOT

GUIDE CHANNEL SUPPORT 25 LL

Tab. 071 2



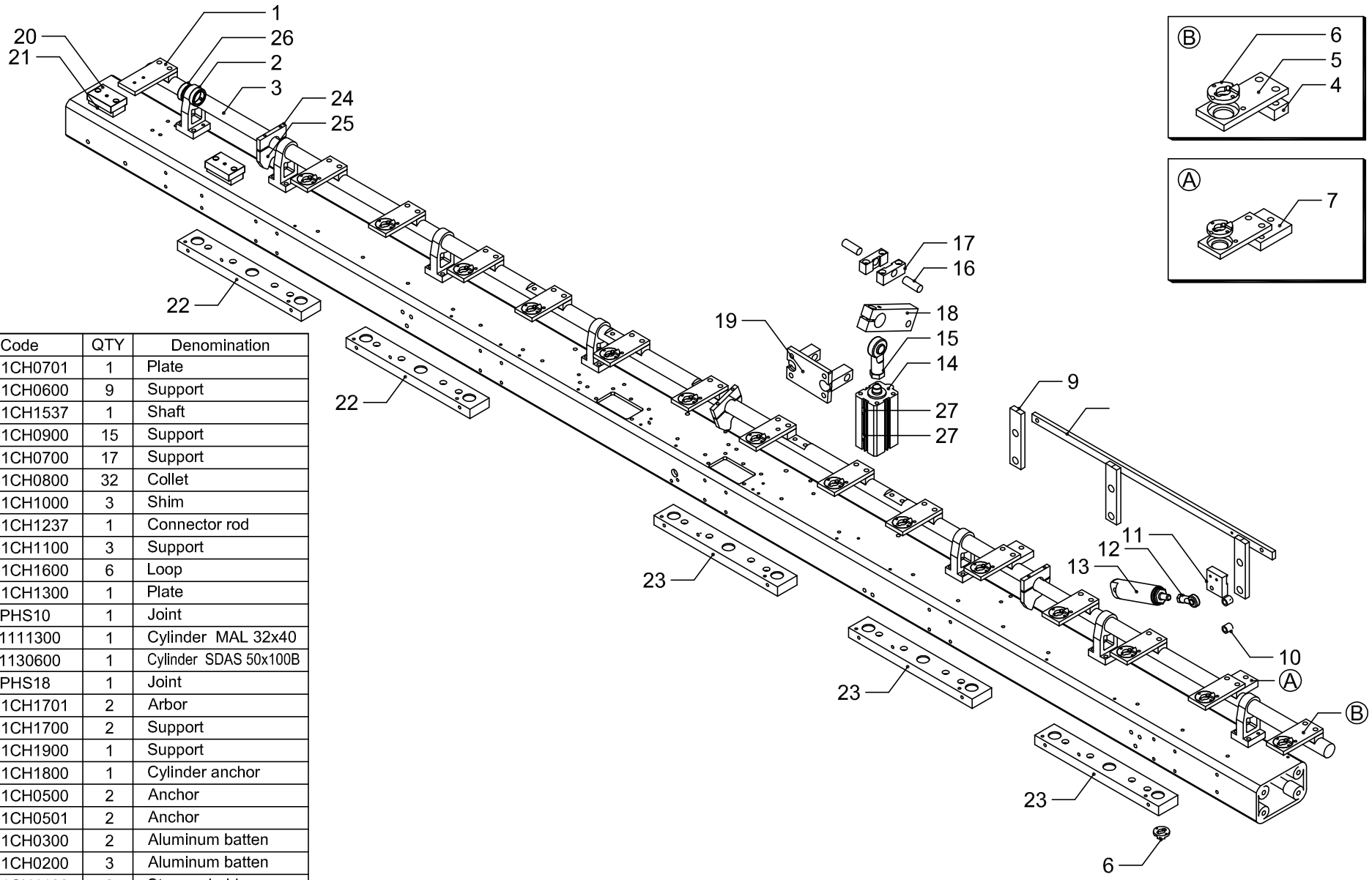
N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	9	Support
3	AV51CH1537	1	Shaft
4	AV51CH0900	15	Support
5	AV51CH0700	17	Support
6	AV51CH0800	33	Collet
7	AV51CH1000	3	Shim
8	AV51CH1237	1	Connector rod
9	AV51CH1100	3	Support
10	AV51CH1600	6	Loop
11	AV51CH1300	1	Plate
12	BPHS10	1	Joint
13	A11111300	1	Cylinder MAL 32x40
14	A11130600	1	Cylinder 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

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

PATRIOT

GUIDE CHANNEL SUPPORT [37] [L]

Tab. 072 5



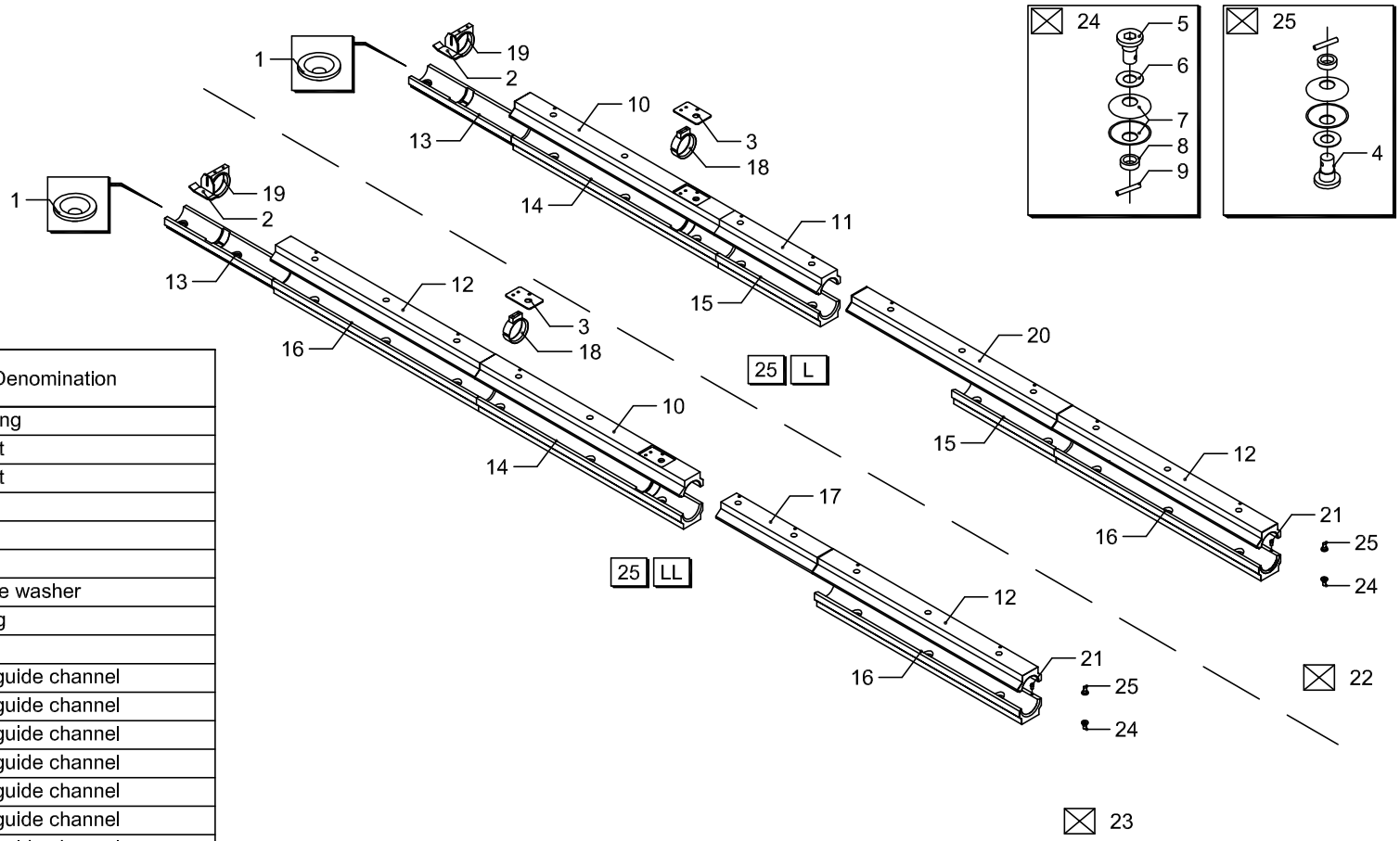
N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	9	Support
3	AV51CH1537	1	Shaft
4	AV51CH0900	15	Support
5	AV51CH0700	17	Support
6	AV51CH0800	32	Collet
7	AV51CH1000	3	Shim
8	AV51CH1237	1	Connector rod
9	AV51CH1100	3	Support
10	AV51CH1600	6	Loop
11	AV51CH1300	1	Plate
12	BPHS10	1	Joint
13	A11111300	1	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	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

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

PATRIOT

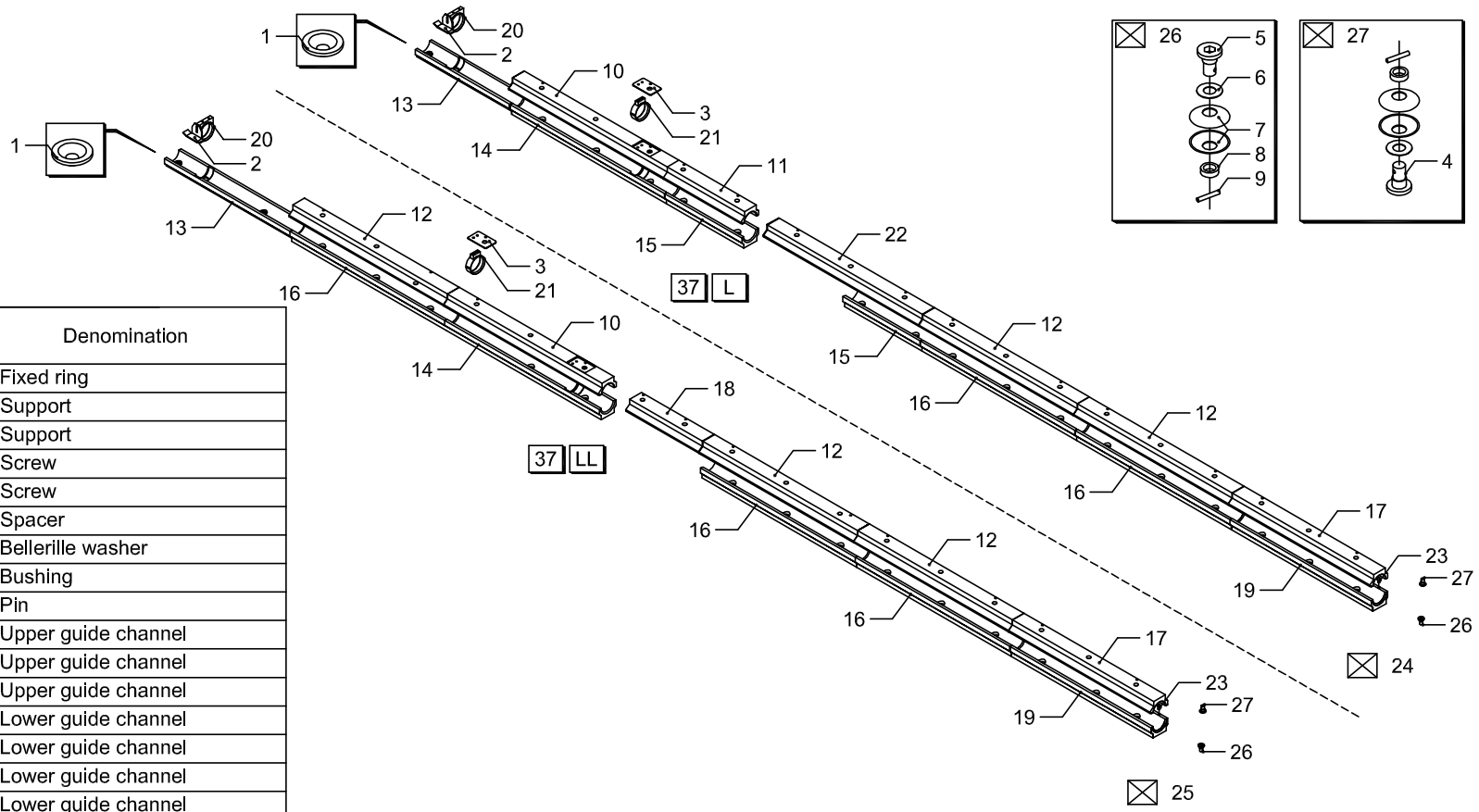
GUIDE CHANNEL SUPPORT 37 LL

Tab. 073 4



N.	Code	QTY		Denomination
		L	LL	
1	AV51CH3300	2	2	Fixed ring
2	AV51CH3600	1	1	Support
3	AV51CH2701	1	1	Support
4	AV51CH3200	11	11	Screw
5	AV51CH3100	10	9	Screw
6	AV51CH3900	21	20	Spacer
7	BB25	42	40	Bellerille washer
8	AV51CH3800	21	20	Bushing
9	ZS080425	21	20	Pin
10	AV__CH2700	1	1	Upper guide channel
11	AV__CH2600	1		Upper guide channel
12	AV__CH2500	1	2	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	1	2	Lower guide channel
17	AV__CH2900		1	Upper guide channel
18	AV__CH3400	1	1	Support
19	AV__CH3500	1	1	Support
20	AV__CH2501	1		Upper guide channel
21	AV51CH4200	10	12	Arbor (12~37 Type)
22	AV__CH0025-L	1		Guide channel
23	AV__CH0025-LL	1		Guide channel
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		
24	AV51CH310A	10	9	Build-in fitting set
25	AV51CH320A	11	11	Build-in fitting set

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



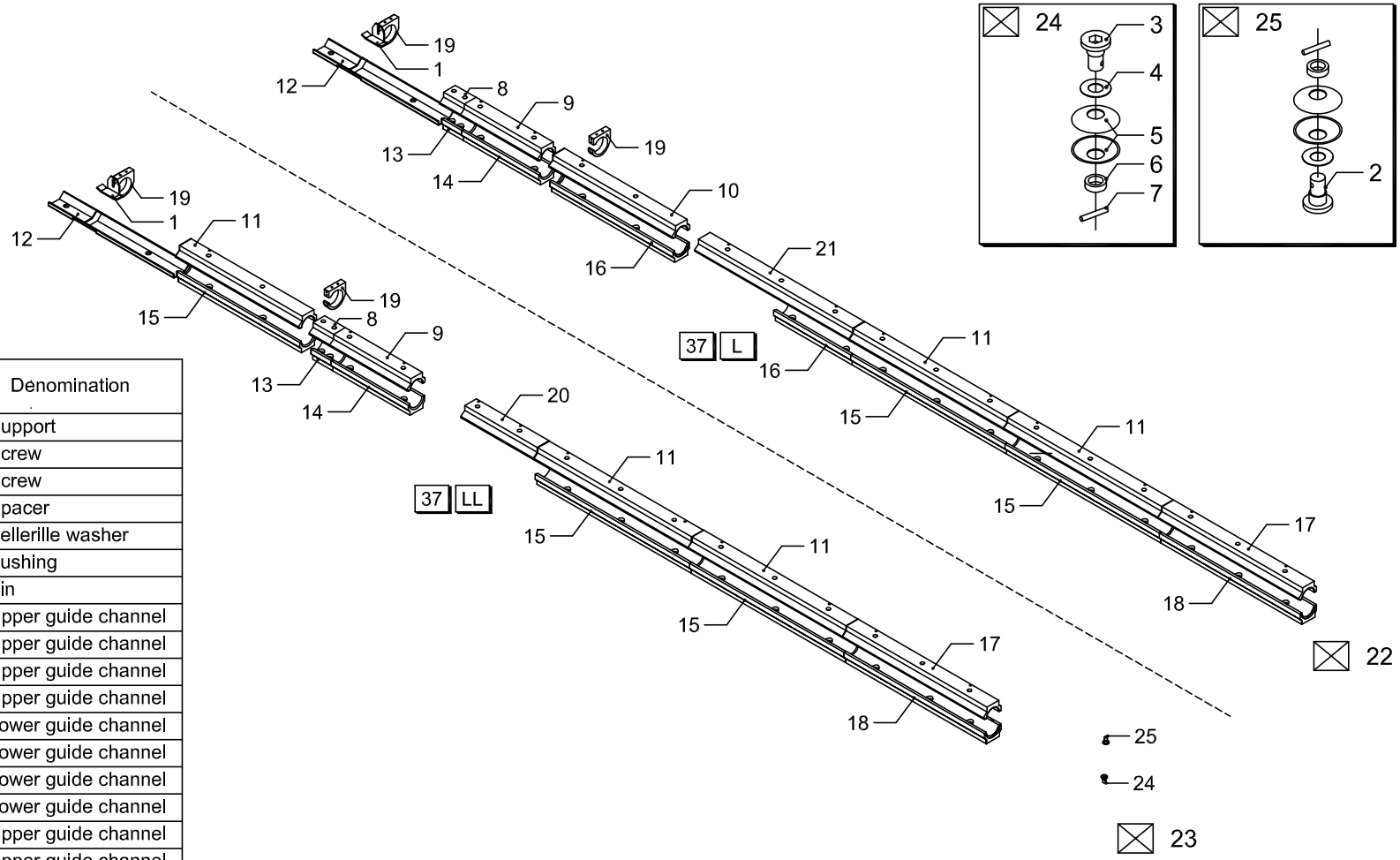
N.	Code	QTY L	QTY LL	Denomination
1	AV51CH3300	2	2	Fixed ring
2	AV51CH3600	1	1	Support
3	AV51CH2701	1	1	Support
4	AV51CH3200	17	17	Screw
5	AV51CH3100	16	15	Screw
6	AV51CH3900	33	32	Spacer
7	BB25	66	64	Bellerille washer
8	AV51CH3800	33	32	Bushing
9	ZS080425	33	32	Pin
10	AV__CH2700	1	1	Upper guide channel
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	AV51CH4200	16	18	Arbor (12~37 Type)
24	AV__CH0037-L	1		Lower guide channel
25	AV__CH0037-LL	1		Lower guide channel
	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		
26	AV51CH310A	16	15	Build-in fitting set
27	AV51CH320A	17	17	Build-in fitting set

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

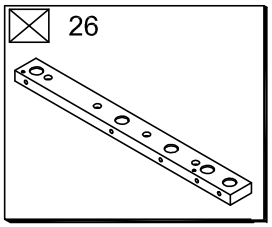
25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

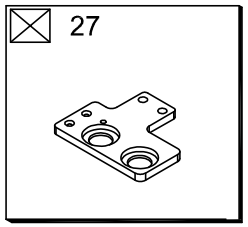
PATRIOT

GUIDE CHANNEL 37



N.	Code	QTY		Denomination
		L	LL	
1	AV51CH3600	1	1	Support
2	AV51CH3200	18	18	Screw
3	AV51CH3100	17	16	Screw
4	AV51CH3900	35	34	Spacer
5	BB25	70	68	Bellerille washer
6	ZS080425	35	34	Bushing
7	AV55CH2720	35	34	Pin
8	AV51BA2800	1	1	Upper guide channel
9	AV55CH2730	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	AV55CH2220	1	1	Lower guide channel
14	AV55CH2230	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-L	1		Guide channel
23	AV55CH0037-LL		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



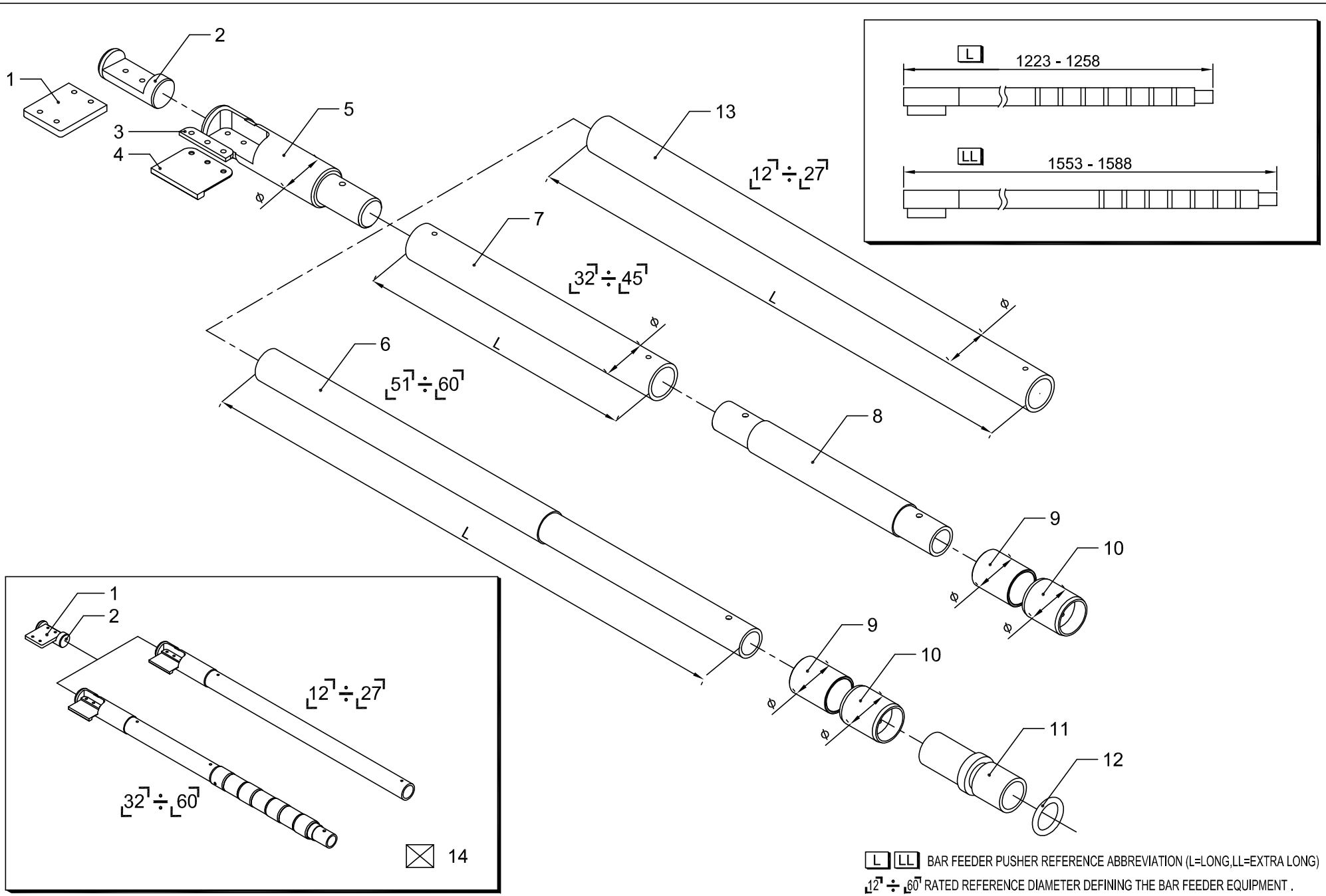


L LL BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG,LL=EXTRA LONG)
25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

PATRIOT

GUIDE CHANNEL 37

Tab. 083 1



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

12 ÷ 60 RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT .

PATRIOT

BAR PUSHER DEVICE

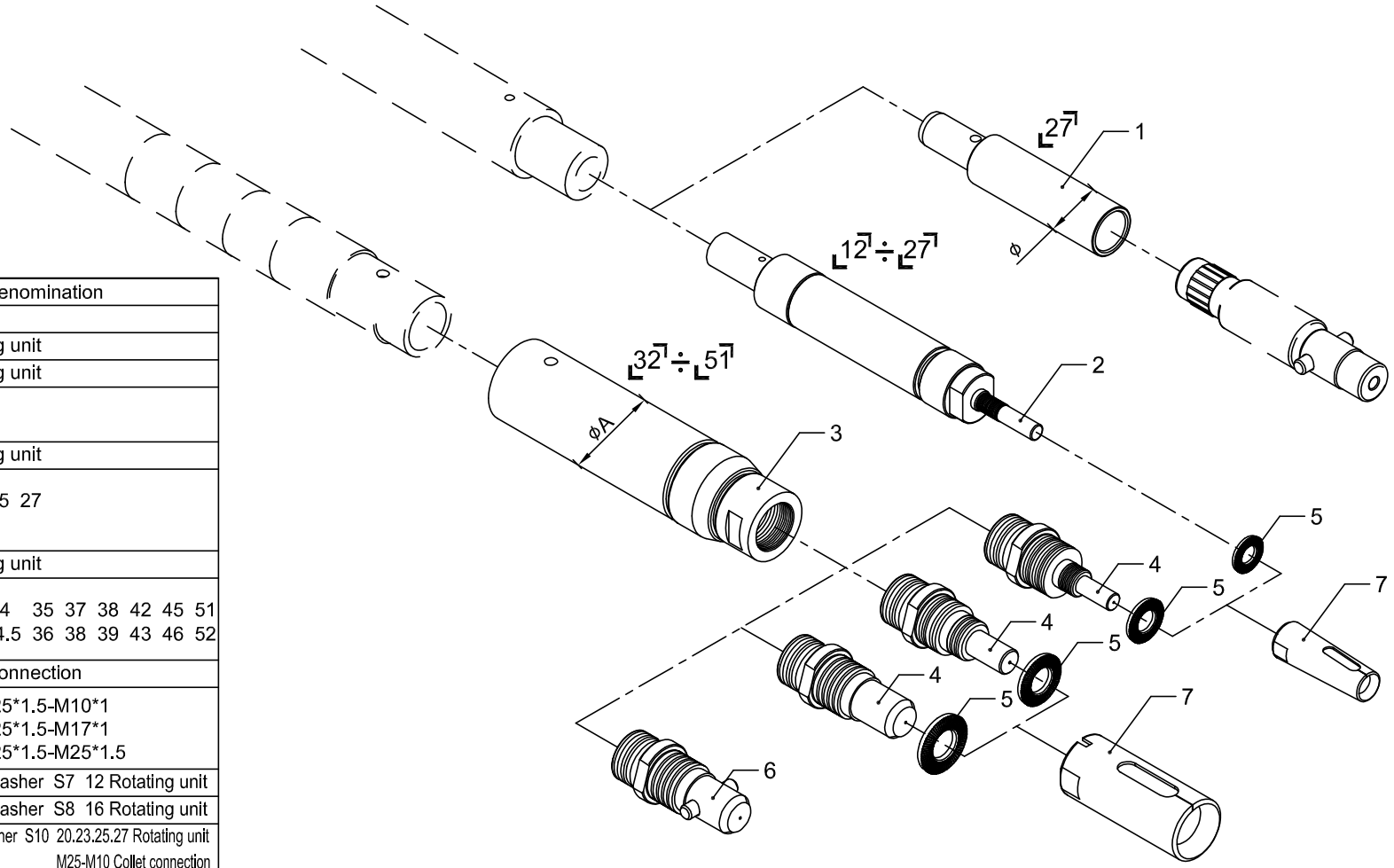
Tab. 090 10

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 11.6 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 / 19 / 20
	AV51PB0300	1	Anchor 25 - 51
4	AV20PB0200	1	Flag 12 / 20
	AV51PB0200	1	Flag 23 / 51
5	AV__PB0120	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		
L	AV51PB0400	1	Bar pusher ϕ50.8 L=1005 (51.60 TYPE)
LL	AV51PB0500	1	Bar pusher ϕ50.8 L=1335 (51.60 TYPE)
L	AV__PB0400	1	Bar pusher L=642
LL	AV__PB0500	1	Bar pusher L=972
	NOMINAL DIAMETER D. → 32 35 37 38 42 45 ϕ 30 34 35 38 40 45		
8	AV__PB0600	1	Bar pusher
	NOMINAL DIAMETER D. → 32 35 37 38 42 45 ϕ 27.4 30 32 32 35 40		
9	AV__PB0700	3	Spacer
	NOMINAL DIAMETER D. → 32 35 37 38 42 45 51 ϕ31.5 34 36 37 40 43 49		
10	AV__PB0800	4	Bronze ring
	NOMINAL DIAMETER D. → 32 35 37 38 42 45 51 ϕ 32 34.5 37 38 41.5 44.3 51		
11	AV51PB1100	1	Connector rod
12	AV51PB1200	1	Piston

N.	Code	QTY	Denomination
L	AV__PB0400	1	Bar pusher
13 LL	AV__PB0500	1	Bar pusher
	NOMINAL DIAMETER D. → 12 16 20 25 27 ϕ 12 16 20 25.2 27		
14	AV__PB0010-__	1	Bar pusher device
	TYPE. → L [L] LL [LL] NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 36 37 38 42 45 51 60 ϕ 12 16 20 25 27 32 34.5 36 37 38 41.5 44.3 51 60		

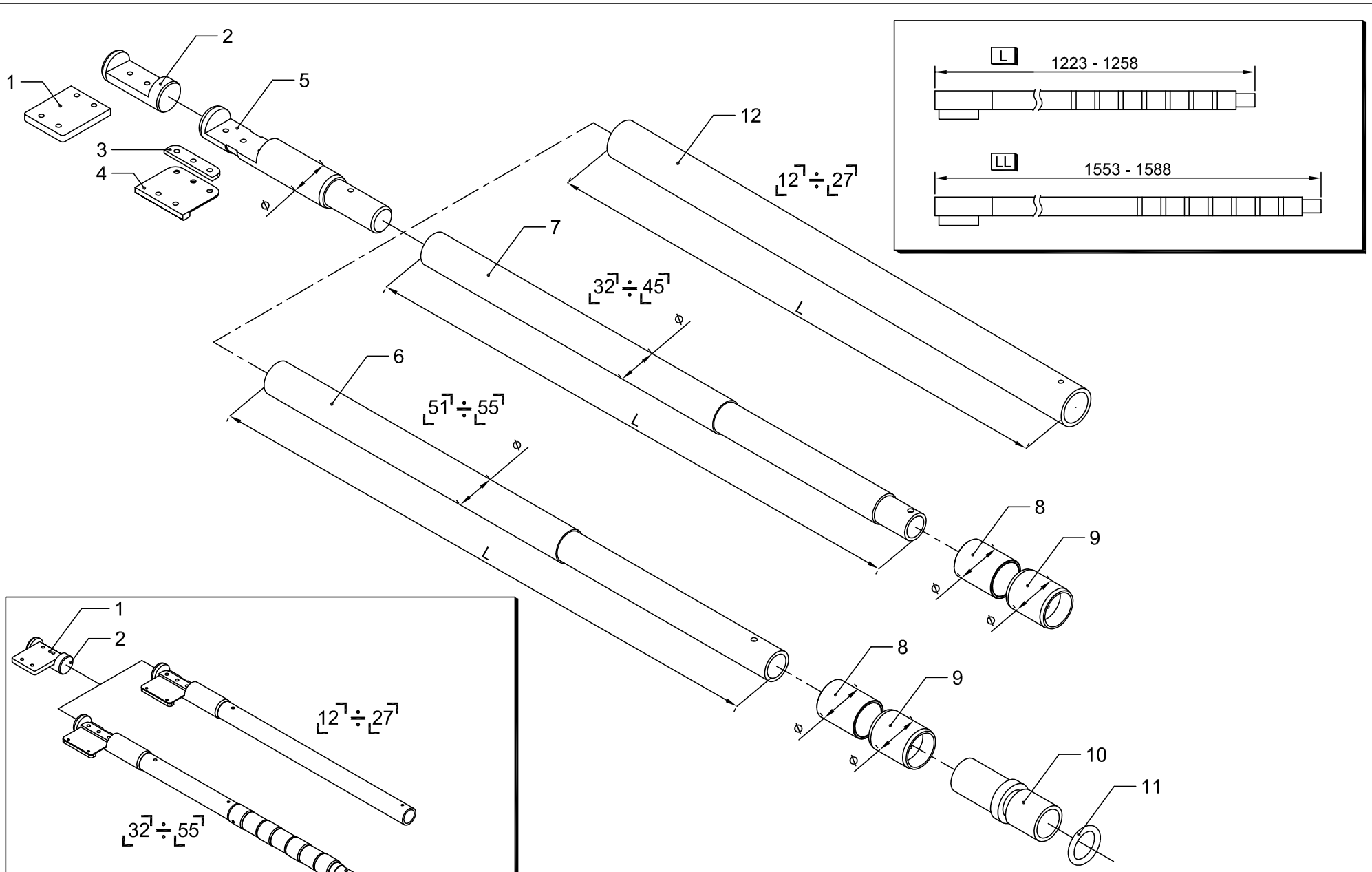
[L] [LL] BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG,LL=EXTRA LONG)

⌜12⌝ ÷ ⌜60⌝ RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT .



N.	Code	QTY	Denomination
1	AV27PB0900	1	Pusher
2	IE_0712000	1	Rotating unit
	IE_0816000	1	Rotating unit
	→ L : Left thread R : Right thread		
2	IE_10__000	1	Rotating unit
	→ NOMINAL DIAMETER D. → 20 25 27 L : Left thread R : Right thread		
3	IE_25__000	1	Rotating unit
	→ NOMINAL DIAMETER D. → 32 34 35 37 38 42 45 51 L : Left thread R : Right thread ϕA 33 34.5 36 38 39 43 46 52		
4	IE_25520__	1	Collet connection
	→ 10 → M25*1.5-M10*1 17 → M25*1.5-M17*1 25 → M25*1.5-M25*1.5 L : Left thread R : Right thread		
5	IEN0712001	1	Safety washer S7 12 Rotating unit
5	IEN0813001	1	Safety washer S8 16 Rotating unit
5	IEN1016001	1	Safety washer S10 20.23.25.27 Rotating unit M25-M10 Collet connection
5	IEN1724001	1	Safety washer S16 M25-M17 Collet connection
5	IEN2636001	1	Safety washer S24 M25-M25 Collet connection
6	IE_2552020	1	Grease nipple M25-ϕ20
	→ L : Left thread R : Right thread		
7	IE_1020___	1	Bar collet
	→ 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 .



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

[12] ÷ [55] RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT .

PATRIOT

BAR PUSHER DEVICE

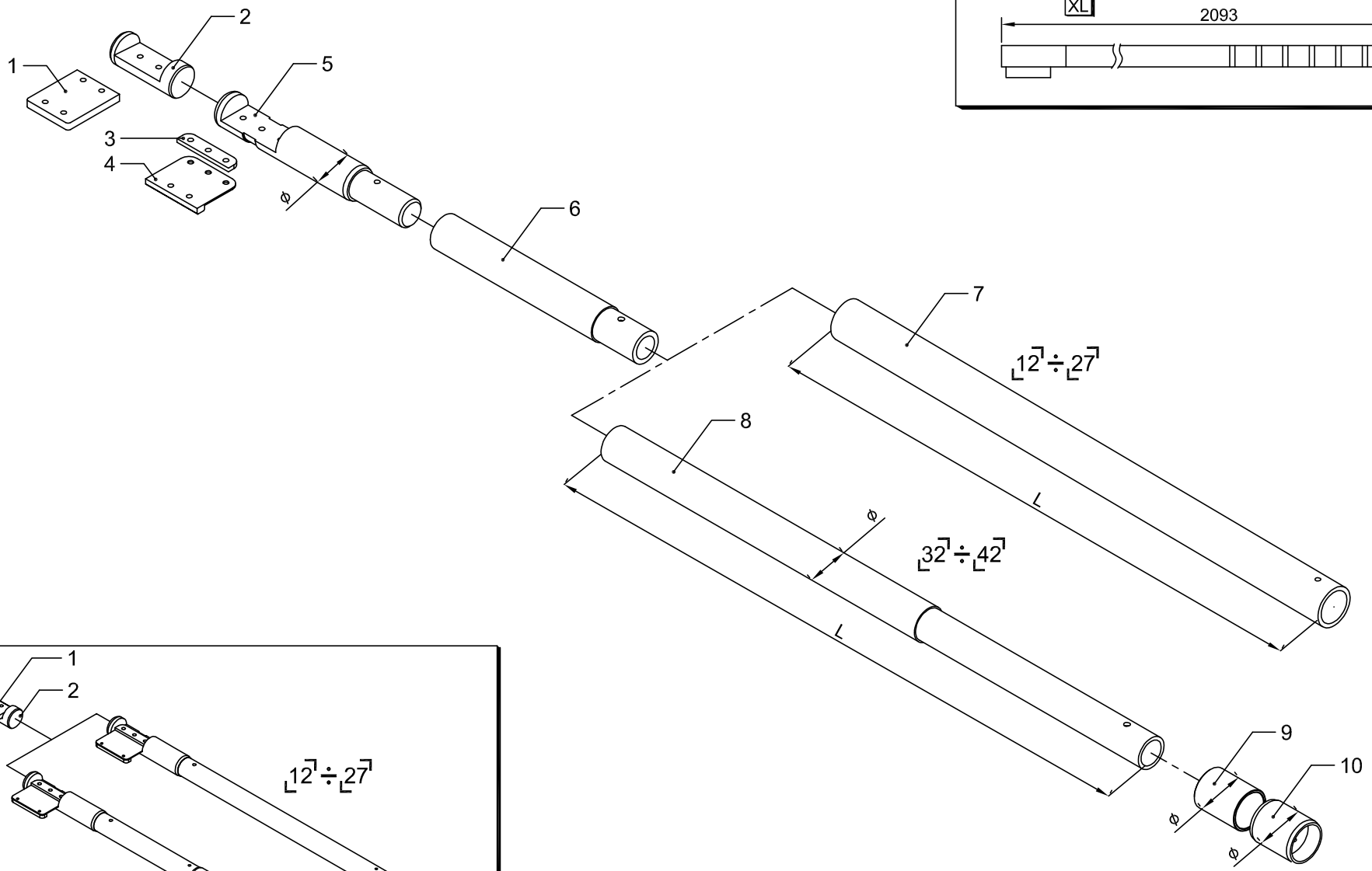
Tab. 092 5

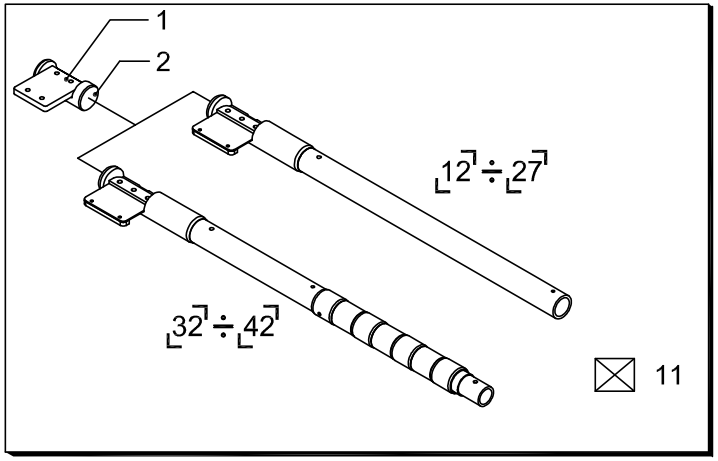
N.	Code	QTY	Denomination
1	AV51PB1002	1	Prefeed pusher flag
2	AV__PB0900	1	Prefeed pusher
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 45 51 55 ø 11.6 16 20 25 27 32.5 35.5 38.5 42.5 45.5 51.5 55		
3	AV16PB0300	1	Anchor 10 - 16
	AV20PB0300	1	Anchor 18 / 19 / 20
	AV51PB0300	1	Anchor 25 - 51
4	AV20PB0210	1	Flag 12 / 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 55 ø 12 16 20 25 27 32 35 38 42 45 51 55		
L	AV51PB0420	1	Bar pusher ø50.8 L=997 51.55 TYPE
LL	AV51PB0520	1	Bar pusher ø50.8 L=1327 51.55 TYPE
L	AV__PB0420	1	Bar pusher L=1061
LL	AV__PB0520	1	Bar pusher L=1391
	NOMINAL DIAMETER D. → 32 35 38 42 45 ø 30 34 38 40 44		
8	AV__PB0700	3	Spacer
	NOMINAL DIAMETER D. → 32 35 38 42 45 51 ø 31.5 34 37 40 43 49		
9	AV__PB0800	4	Bronze ring
	NOMINAL DIAMETER D. → 32 34 35 38 42 45 51 55 ø 32 34 34.5 38 41.5 44.3 51 55		
10	AV51PB1100	1	Connector rod
11	AV51PB1200	1	Piston

N.	Code	QTY	Denomination
L 12	AV__PB0420	1	Bar pusher
LL 12	AV__PB0520	1	Bar pusher
	NOMINAL DIAMETER D. → 12 16 20 25 27 ø 11 15 19 24 25		
13	AV__PB0020-__	1	Bar pusher device
	TYPE. → L [L] LL [LL] NOMINAL DIAMETER D. → 12 16 20 25 27 32 34 35 38 42 45 51 55 ø 10 14 18 23 24 32 34 34.5 38 41.5 44.3 51 55		

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

L12 ÷ L55 RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT .





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

12 ÷ 42 RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT .

PATRIOT

BAR PUSHER DEVICE XL

Tab. 093 1

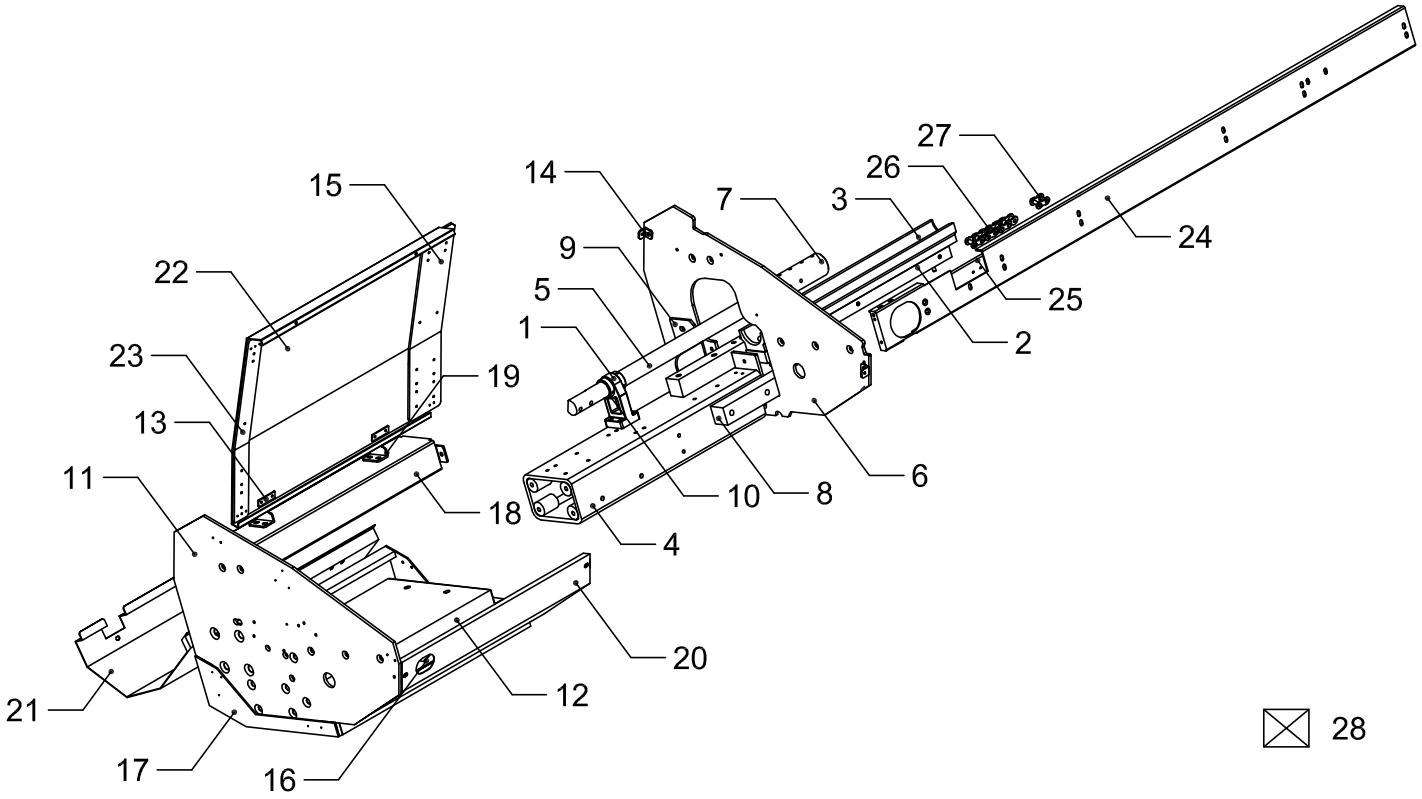
N.	Code	QTY	Denomination
1	AV51PB1002	1	Prefeed pusher flag
2	AV__PB0900	1	Prefeed pusher
	NOMINAL DIAMETER D. →		12 16 20 25 27 32 35 38 42 ϕ 11.6 16 20 25 27 32.5 35.5 38.5 42.5
3	AV16PB0300	1	Anchor 10 - 16
	AV20PB0300	1	Anchor 18 / 19 / 20
	AV51PB0300	1	Anchor 25 - 42
4	AV20PB0210	1	Flag 12 / 20
	AV51PB0210	1	Flag 25 / 42
5	AV__PB0120	1	Pusher
	NOMINAL DIAMETER D. →		12 16 20 25 27 32 35 38 42 ϕ 12 16 20 25 27 32 35 38 42
6	AV__PB0530	1	Bar pusher L=540
	NOMINAL DIAMETER D. →		12 16 20 25 27 32 35 38 42 ϕ 12 16 20 25 27 32 35 38 42
7	AV__PB0520	1	Bar pusher L=1391
	NOMINAL DIAMETER D. →		12 16 20 25 27 ϕ 11 15 19 24 25
8	AV__PB0520	1	Bar pusher L=1391
	NOMINAL DIAMETER D. →		32 35 38 42 ϕ 30 33 36 40
9	AV__PB0700	3	Spacer
	NOMINAL DIAMETER D. →		32 35 38 42 ϕ 31.5 34 37 40
10	AV__PB0800	4	Bronze ring
	NOMINAL DIAMETER D. →		32 34 35 38 42 ϕ 32 34 34.5 38 41.5

N.	Code	QTY	Denomination
11	AV__PB0020-__	1	Bar pusher device
	TYPE. →		XL [XL]
	NOMINAL DIAMETER D. →		12 16 20 25 27 32 34 35 38 42 ϕ 10 14 18 23 24 32 34 34.5 38 41.5

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

⌜12⌝ ÷ ⌜42⌝ RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT .

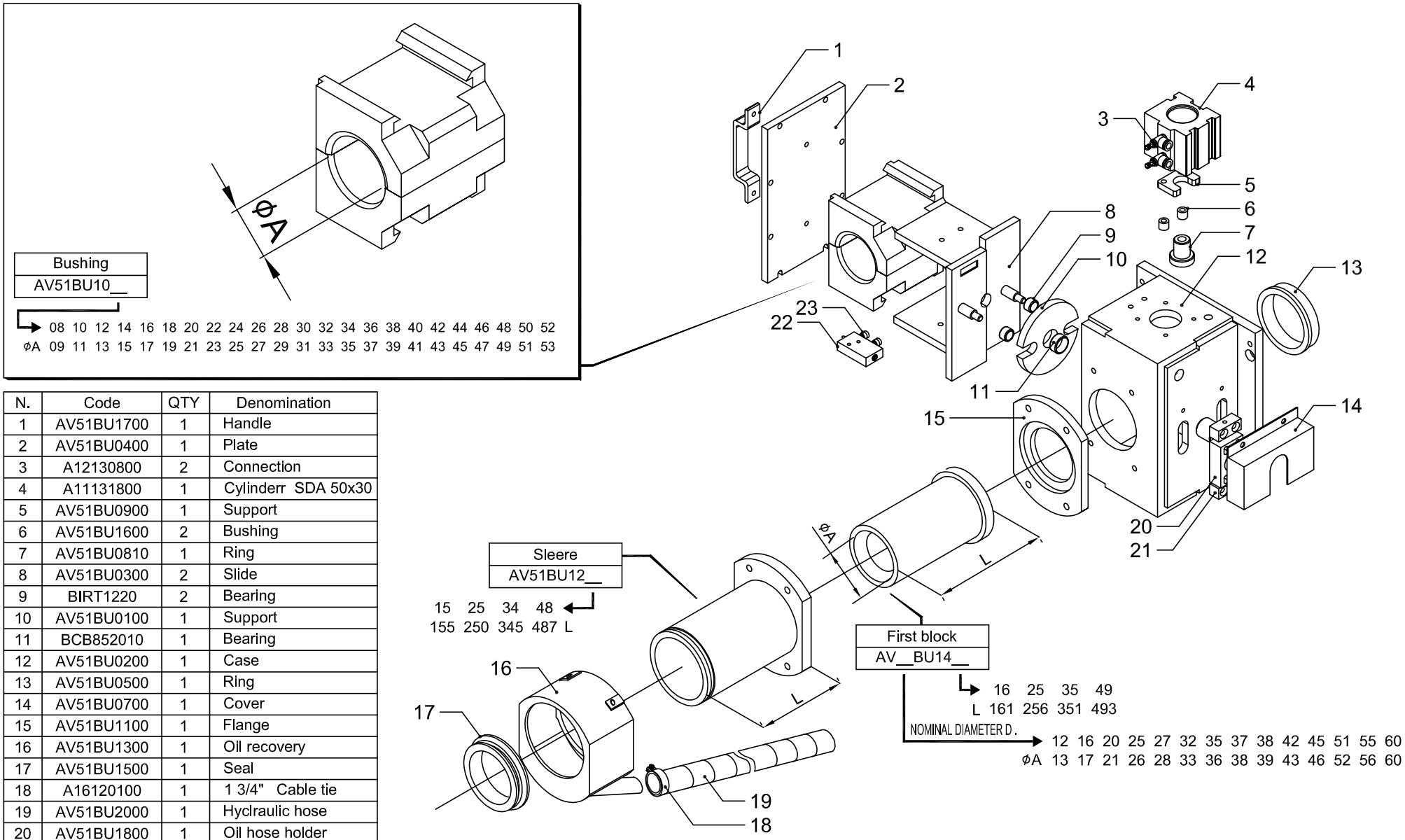
N.	Code	QTY	Denomination
1	AV51CH0600	1	Support
2	AV51CH000C	1	Aluminum batten
3	AV__CH2300	1	Lower guide channel
4	AV51CH0139	1	Beam
5	AV51CH1538	1	Shaft
6	AV51BA1640	1	Plate
7	AV51CH4900	1	Connector rod
8	AV51CH5100	2	Connector rod
9	AV51BA1650	1	Plate
10	AV51CH3700	2	Fixing ring
11	AV51BA1600	1	Plate
12	AV51MA2201	1	Support
13	G81121111	4	Hinge
14	AV51BA1901	3	Plate
15	AV51BA2111	1	Plate
16	AV51MA2300	1	Support
17	AV51BA1839	1	Bowl
18	AV51MA1920	1	Tube
19	AV51BA2201	2	Plate
20	AV51BA1950	1	Cover
21	AV51BA2050	1	Cover
22	AV51BA2150	1	Cover
23	AV51BA2101	1	Plate
24	AV51DR1006	1	Chain guide
25	AV51DR1106	1	Plate
26	AV51DR1603	1	Chain
27	AV51GR1801	2	Chain link
28	AV51XL000A	1	Pusher extension kit 540mm



PATRIOT

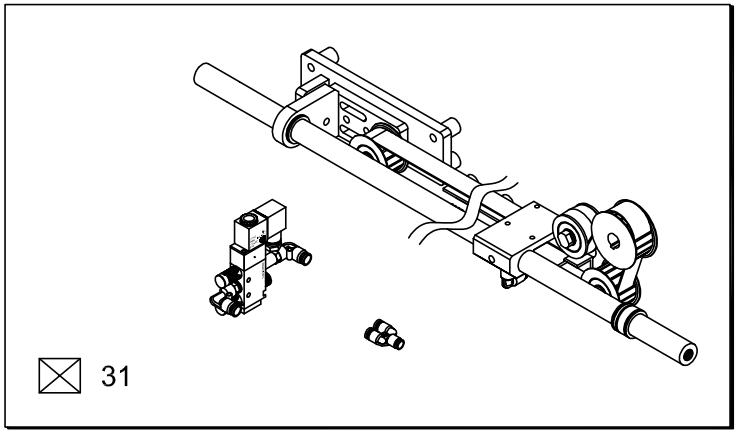
PUSHER EXTENSION KIT 540MM

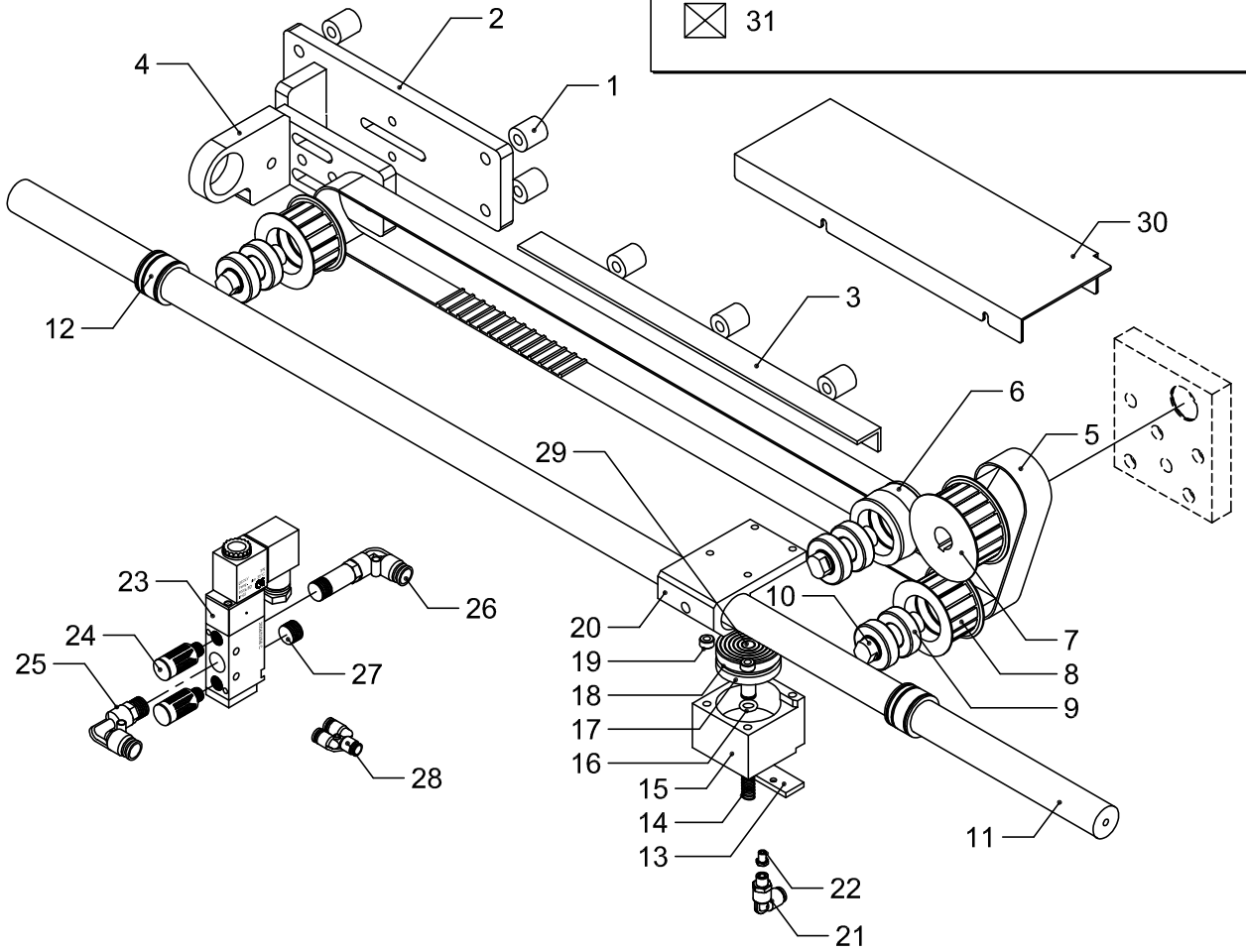
Tab. 095 1



N.	Code	QTY	Denomination
1	AV51BU1700	1	Handle
2	AV51BU0400	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	AV51BU0300	2	Slide
9	BIRT1220	2	Bearing
10	AV51BU0100	1	Support
11	BCB852010	1	Bearing
12	AV51BU0200	1	Case
13	AV51BU0500	1	Ring
14	AV51BU0700	1	Cover
15	AV51BU1100	1	Flange
16	AV51BU1300	1	Oil recovery
17	AV51BU1500	1	Seal
18	A16120100	1	1 3/4" Cable tie
19	AV51BU2000	1	Hyclraulic hose
20	AV51BU1800	1	Oil hose holder
21	AV51BU1900	2	Adjuster
22	A12120800	1	Valve
23	A13110800	2	Straight Connector SPC 8-01

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" x 1/8"
23	A12120100	1	Electro valve
24	A14110200	2	Silencer
25	A13120100	1	Bended connector SPL 6-02
26	A13120400	1	Bended connector SPLL 6-02
27	A14120100	1	Bung
28	A13130200	1	Three port Y type
29	AV51SY1503	1	Guide
30	AV51SY3400	1	Belt cover
31	AV51SY0010	1	Sychronization device



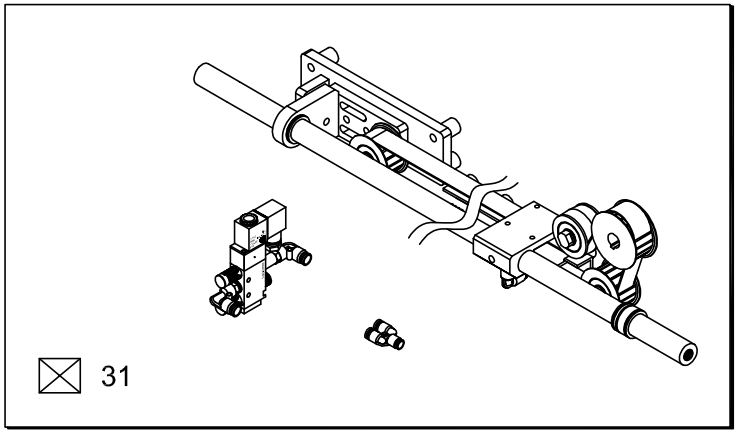


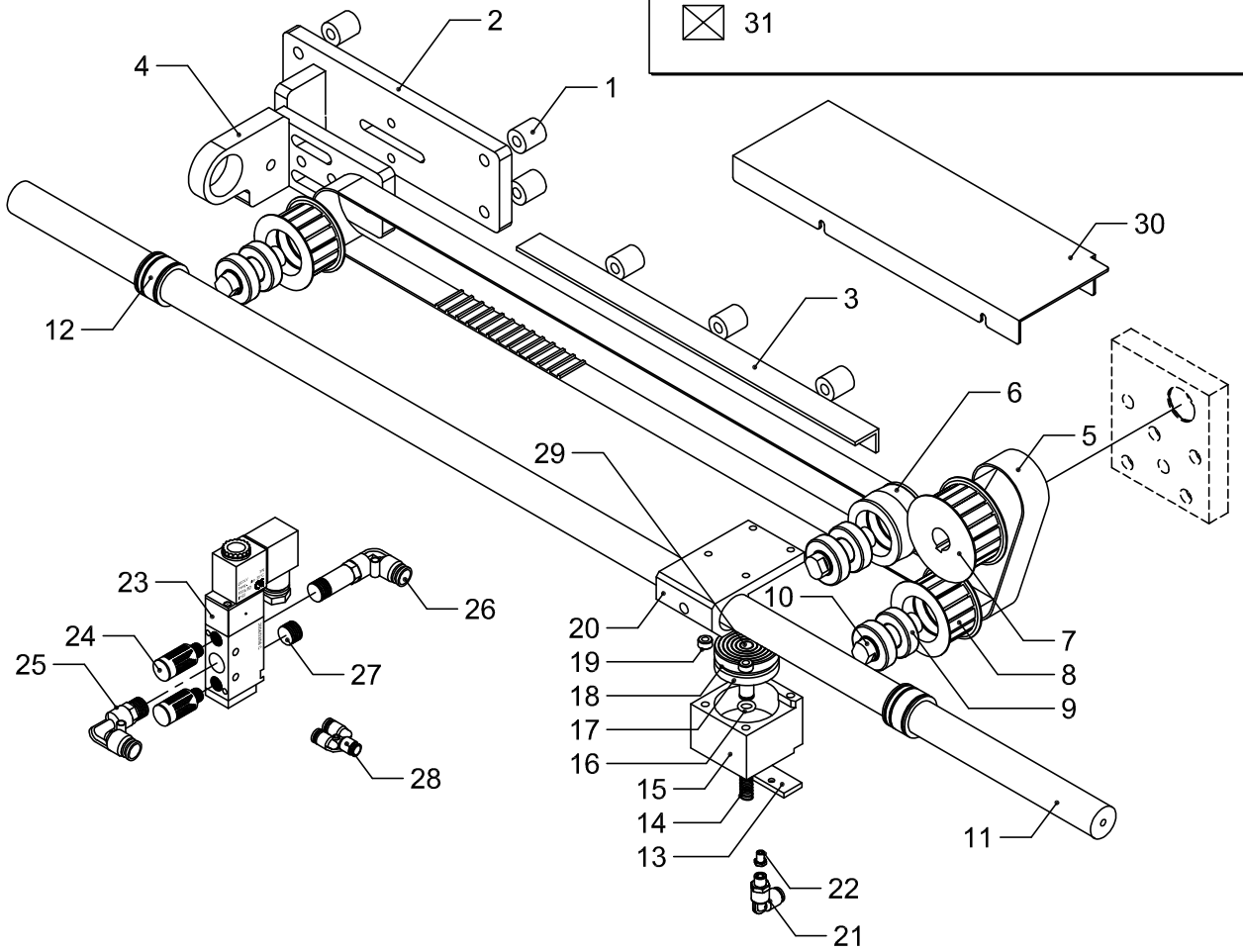
PATRIOT

SYCHRONIZATION DEVICE

Tab. 110 8

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" x 1/8"
23	A12120100	1	Electrovalve
24	A14110200	2	Silencer
25	A13120100	1	Bended connector SPL 6-02
26	A13120400	1	Bended connector SPLL 6-02
27	A14120100	1	Bung
28	A13130200	1	Three port Y type
29	AV51SY1503	1	Guide
30	AV51SY3400	1	Belt cover
31	AV51SY0010	1	Sychronization device

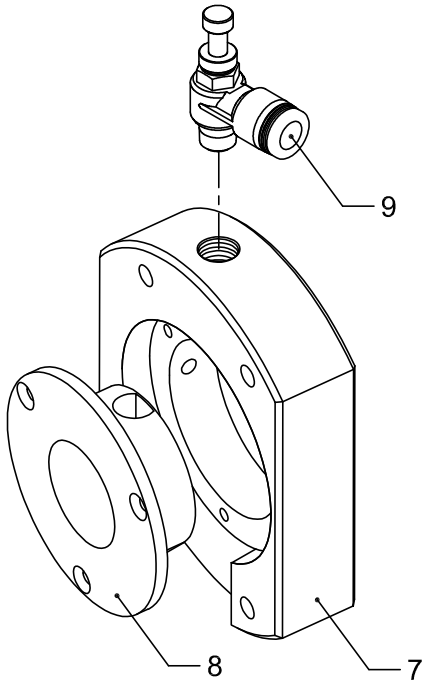


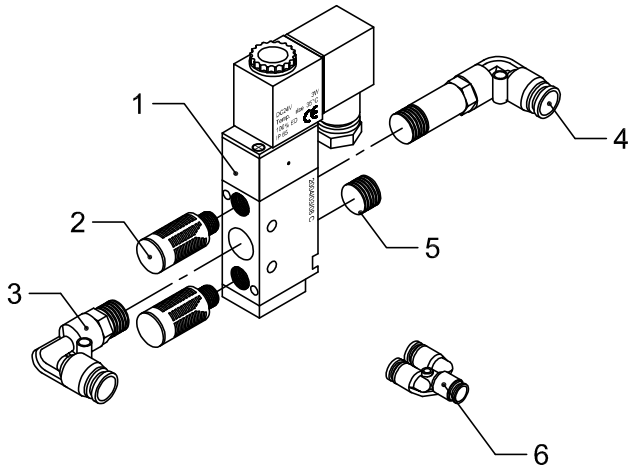


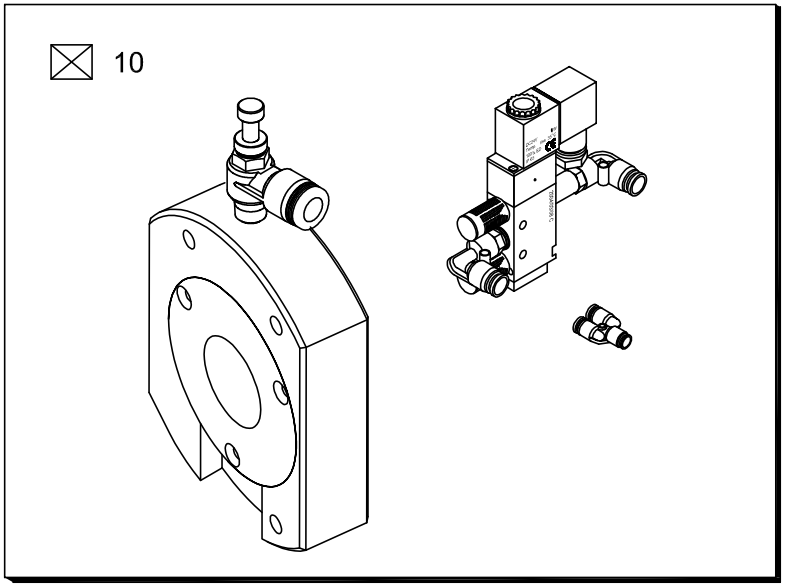
PATRIOT

SYCHRONIZATION DEVICE 71.5MM

Tab. 111 1



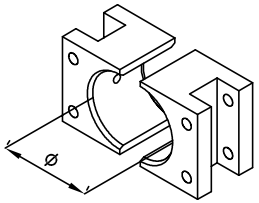


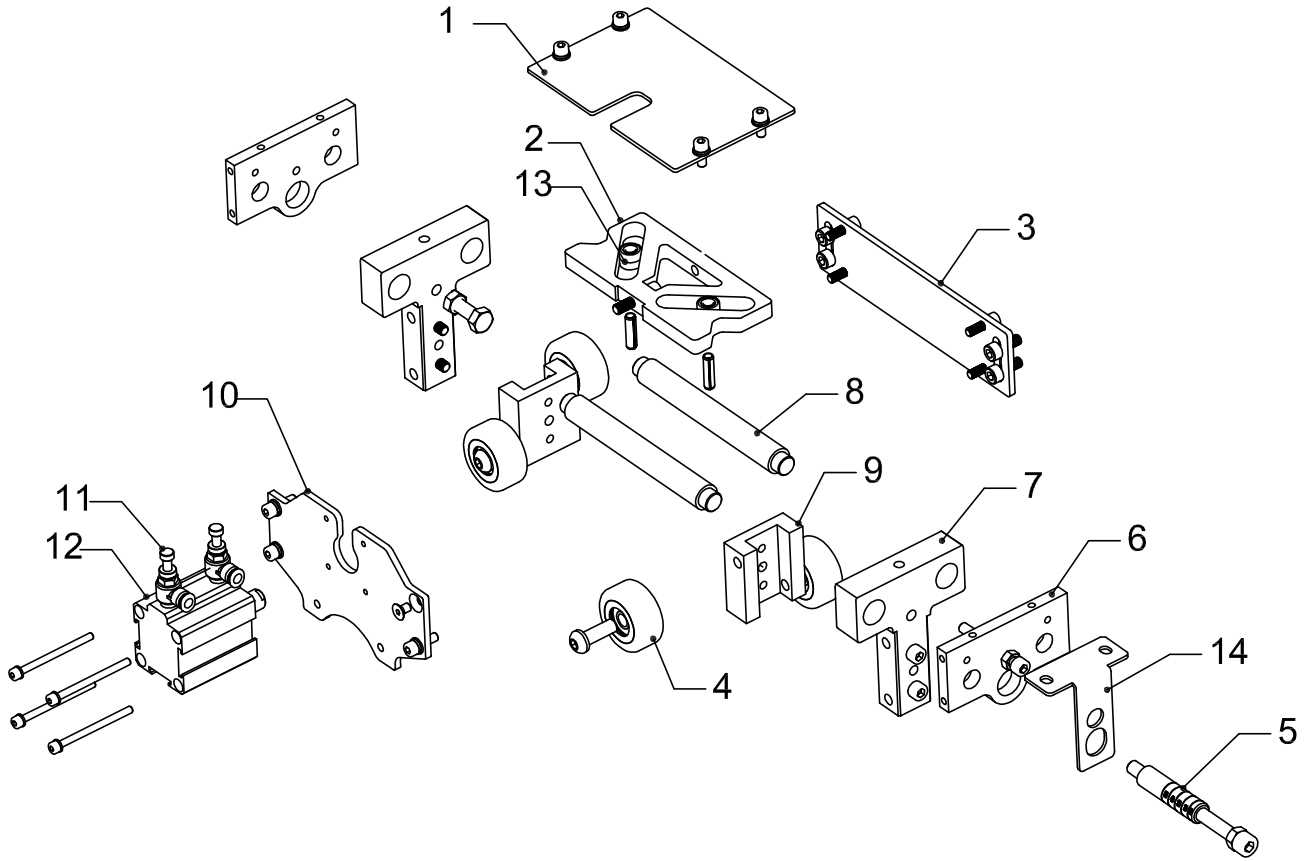


N.	Code	QTY	Denomination
1	A12120100	1	Solenoid valve
2	A14110200	2	Silencer
3	A13120100	2	Bended connector SPL 6-02
4	A13120400	1	Bended connector SPLL 6-02
5	A14120100	1	Bung
6	A13130200	1	Three port Y type
7	AV51TE1001	1	Housing
8	AV51TE1101	1	Flange
9	A12130901	1	Air Control valve JSC8 1/4",ø8
10	AV51RE0001	1	Oil Recovery

Bushing Block
AV51MO08__

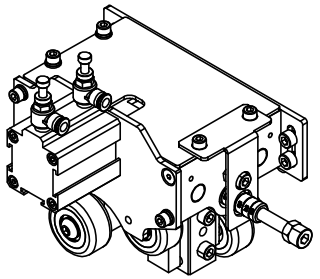
8 20 30 32 34 36 40 50 52
ϕ 9 21 31 33 35 37 41 51 53

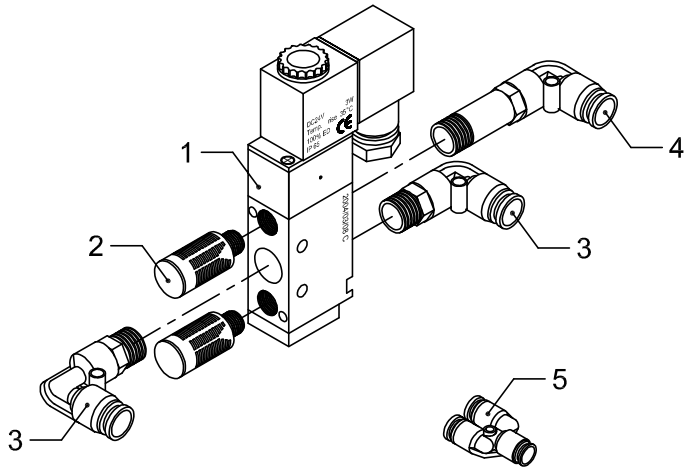


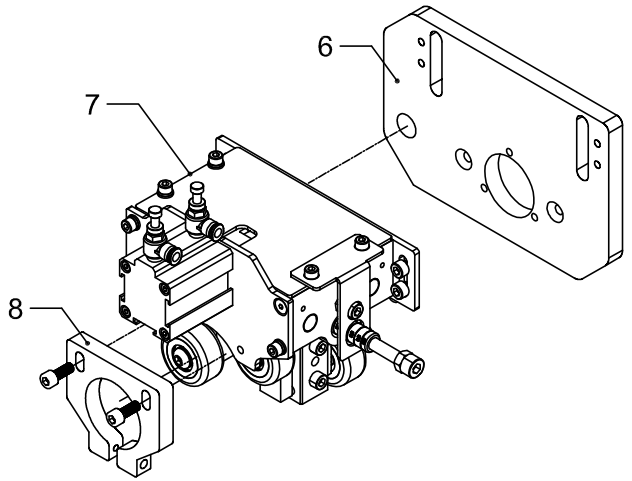


N.	Code	QTY	Denomination
1	AV51MO1000	1	Plate
2	AV51MO0100	1	Cam
3	AV51MO0500	1	Plate
4	HP8127000F	4	Roller
5	AV51MO2200	1	Tube
6	AV51MO0300	2	Plate
7	AV51MO0200	2	Arm
8	AV51MO0700	2	Bar
9	AV51MO1100	2	Bracket
10	AV51MO0600	1	Plate
11	A12130100	2	Flow throttle
12	A11131100	1	Cylinder SDA32x30
13	B686ZZ	4	Bearing
14	AV51MO2300	1	Plate
15	AV51MO000A	1	Anti-vibration device

☒ 15

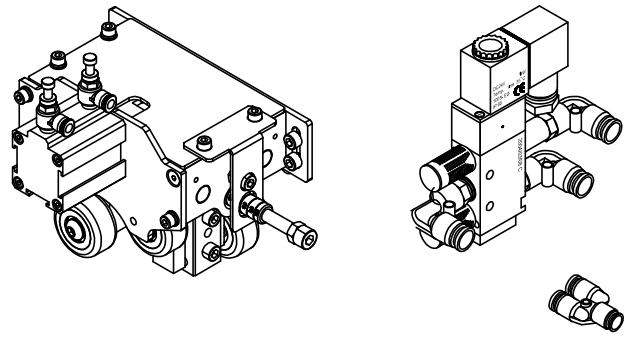


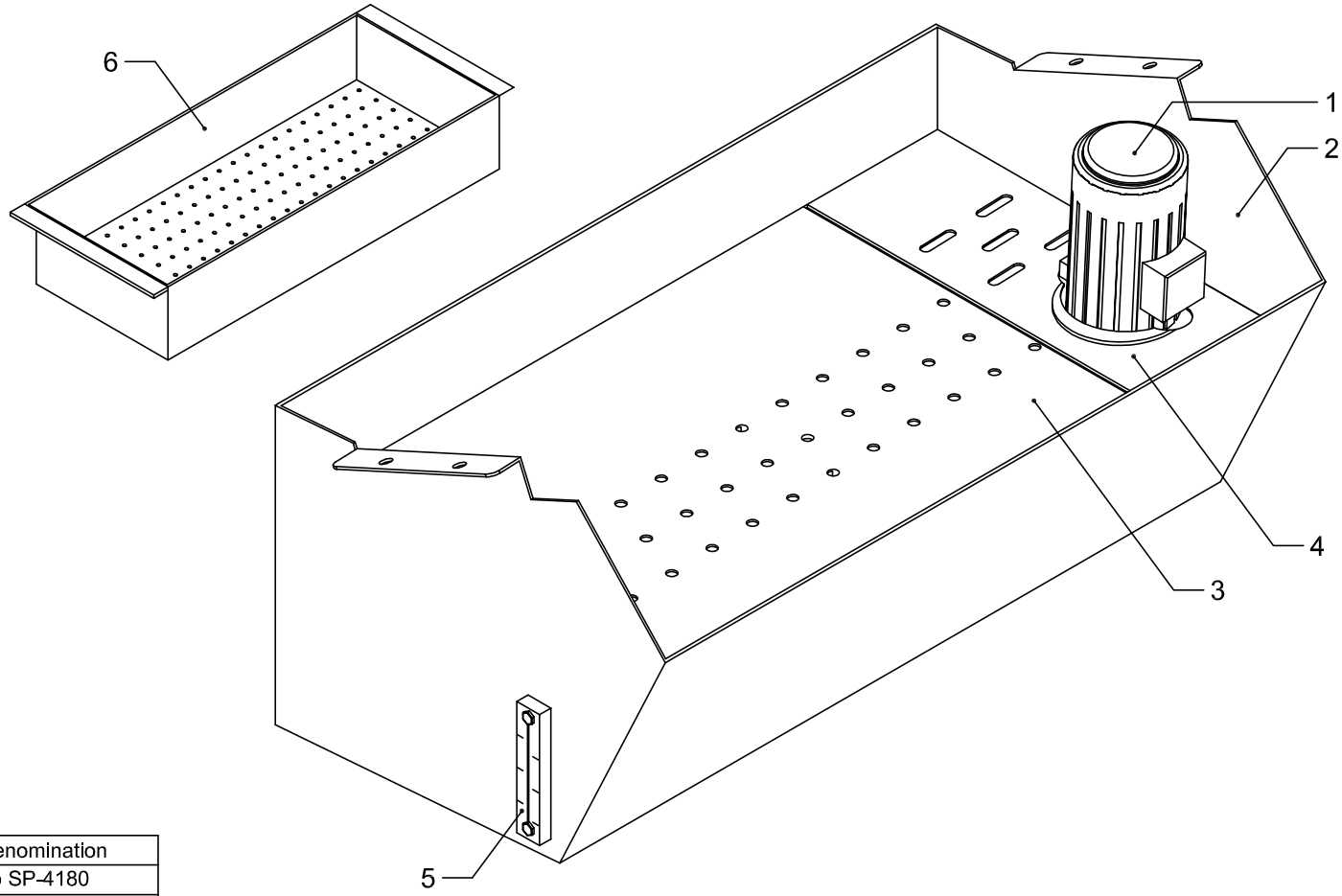




N.	Code	QTY	Denomination
1	A12120100	1	Electro valve
2	A14110200	2	Silencer
3	A13120100	2	Bended connector SPL 6-02
4	A13120400	1	Bended connector SPLL 6-02
5	A13130200	1	Three port Y type
6	AV51MO1300	1	Plate
7	AV51MO000A	1	Anti-vibraion device
8	AV37TE0700	1	Clamp
9	AV51MO1002	1	Movable anti-vibration + Solenoid valve

☒ 9





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	Remnan tank

PATRIOT

OIL TANK

Tab. 130 6

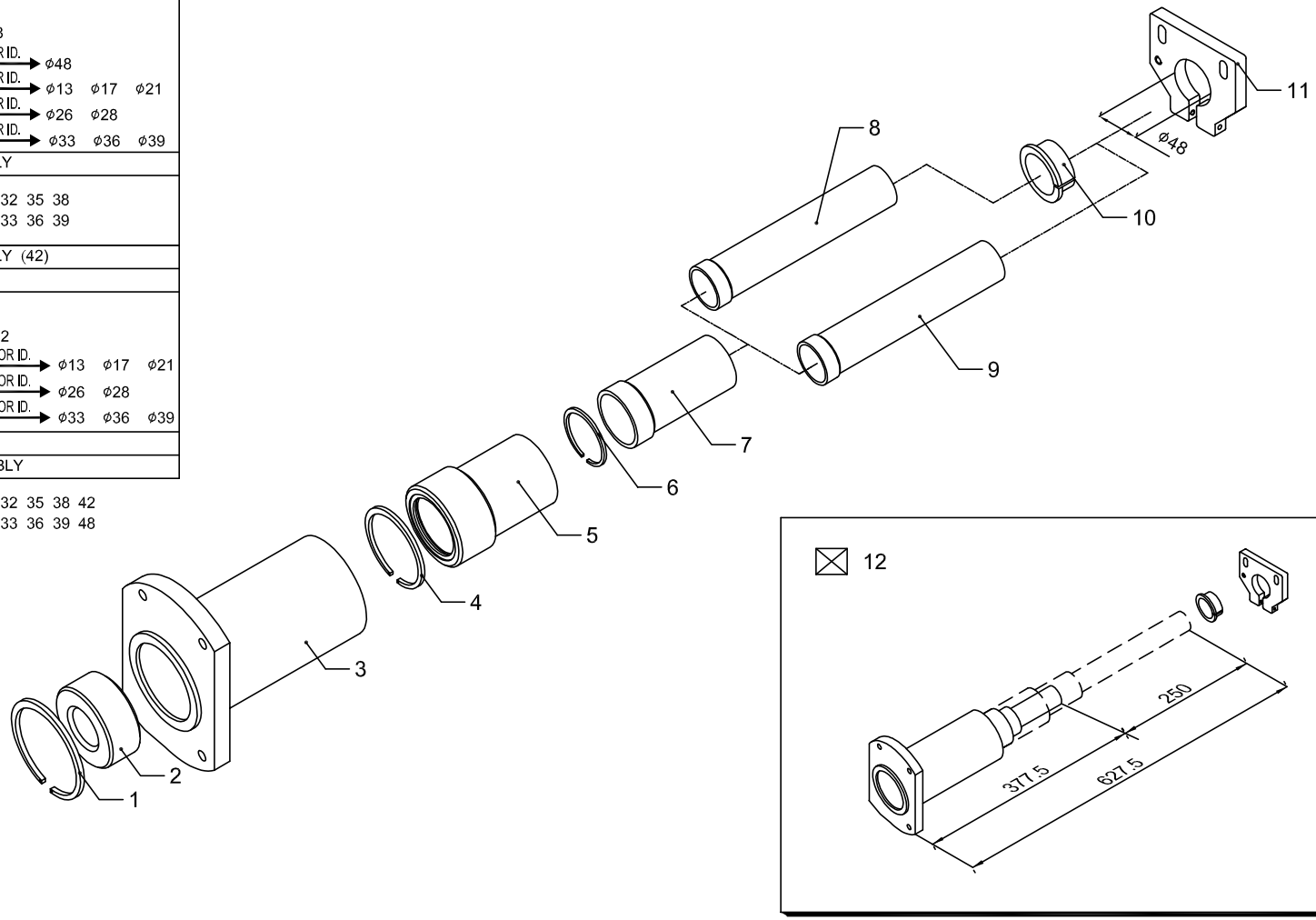
PATRIOT

AIR PRESSURE DIAGRAM ITEM

Tab. 141 1

Drawing No	Item designation	Description and function	Technical data	Quantity	Supplier	Suppliers reference	Remarks
A12110300	F.R.L.	FILTER,REGULATOR, LUBRICATOR	1.0-10kgf/cm^2	1	AIRTAC	BFC-2000	
A12120200	VAL 1	5/2 WAY VALVE	DC24	1	AIRTAC	4V220-08	VLMH9465
	VAL 2						
	VAL 3			1			
	VAL 4						
	VAL 7			1			
	VAL 11						
A12120100	VAL 5	5/2 WAY VALVE	DC24	1	AIRTAC	4V210-08	
	VAL 6			1			
	VAL 8			1			
	VAL 9			1			
	VAL 10			1			
	VAL 12			1			
A11131100	C1	ANTI-VIBRATION DEVICE		1		SDA 32*30	
A11131800	C2	1st ANTI-VIBRATION		1		SDA 50*30	
AV51RE0001	C3	AIR KNIFE		1		AV51RE0001	
AV51SY1300	C4	SYNCHRONIZATION		1		AV51SY1300	
A11131000	C5	EXTRACTION		1		SDA 80*45	
A11130700	C6	CUTTING DEVICE		1		SDA 12*15	
A11150500	C7	BAR LOADING		1		SC-63*25-CB	
A11130900	C8	CLAMPING		1		SDA 80*100	
A11130300	C9	CHANNEL LOCK		1		SDA 40*25	
A11130600	C10	CHANNEL CLOSE & OPEN		1		SDA 40*25	
A12130100	R1A	FLOW REGULATOR		1		SC6-01MA(PSB6-01NI)	ISO 9001
	R1B			1			
A12130800	R2A	FLOW REGULATOR	1-10 bar	1		JSC 8-02 1/4", ϕ8	
	R2B			1			
	R10B			1			
A12130901	R3	FLOW REGULATOR		1		JSC 8-02 1/4", ϕ8	
A12121300	R4	L tape jiont		1		SPH8-01	
A12130900	R5A	FLOW REGULATOR		1		JSC 8-03 1/4", ϕ8	
	R5B			1			
	R7A			1			
	R7B			1			
	R8A			1			
	R8B			1			
A12131000	R9A	HOSE TO HOSE FLOW REGULATOR		1		SPA-8 ϕ8	
	R9B			1			
	R10A			1			

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 ID. → ø48 FOR ID. → ø13 ø17 ø21 FOR ID. → ø26 ø28 FOR ID. → ø33 ø36 ø39		
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)
10	MEP2061__	1	Ring (12~38)
	NOMINAL DIAMETER D. → 40 41 42 ø40 ø30 ø22 FOR ID. → ø13 ø17 ø21 FOR ID. → ø26 ø28 FOR ID. → ø33 ø36 ø39		
11	AV38TE0700	1	Plate
12	MEK206110__	1	400MM TELE NOSE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 ø 13 17 21 26 28 33 36 39 48		

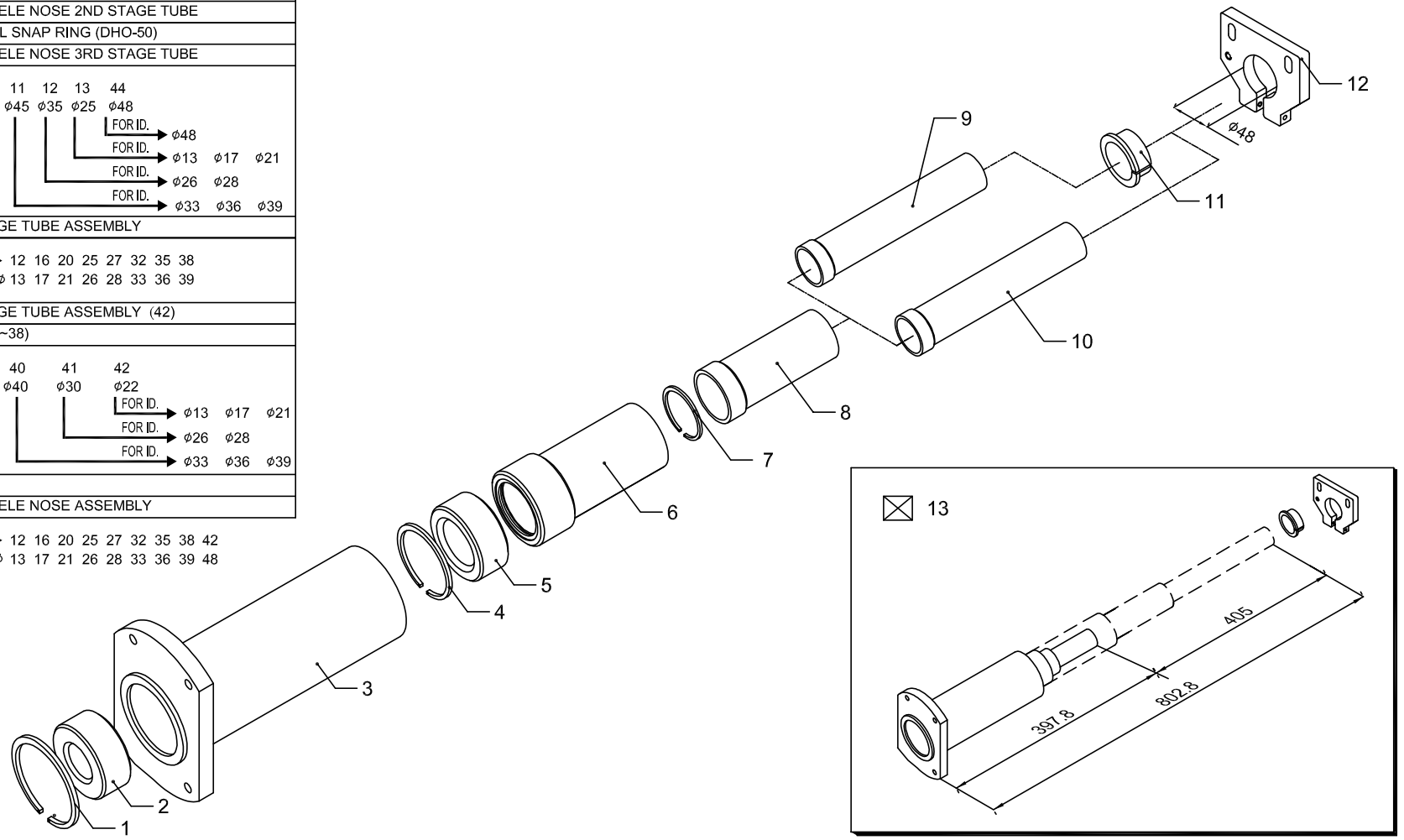


PATRIOT

250MM TELE NOSE ASSEMBLY

Tab. MEK206110__ 9

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		
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
	NOMINAL DIAMETER D. → 31 32 33 34 35 36 38 37 47 ϕ 39 36 33 28 26 21 17 13 43		
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
	NOMINAL DIAMETER D. → 11 12 13 44 ϕ45 ϕ35 ϕ25 ϕ48 FOR ID. → ϕ48 FOR ID. → ϕ13 ϕ17 ϕ21 FOR ID. → ϕ26 ϕ28 FOR ID. → ϕ33 ϕ36 ϕ39		
9	MEK206108__	1	4TH STAGE TUBE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 ϕ 13 17 21 26 28 33 36 39		
10	MEP206145	1	4TH STAGE TUBE ASSEMBLY (42)
11	MEP2061__	1	Ring (12~38)
	NOMINAL DIAMETER D. → 40 41 42 ϕ40 ϕ30 ϕ22 FOR ID. → ϕ13 ϕ17 ϕ21 FOR ID. → ϕ26 ϕ28 FOR ID. → ϕ33 ϕ36 ϕ39		
12	AV38TE0700	1	Plate
13	MEK206111__	1	400MM TELE NOSE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 ϕ 13 17 21 26 28 33 36 39 48		

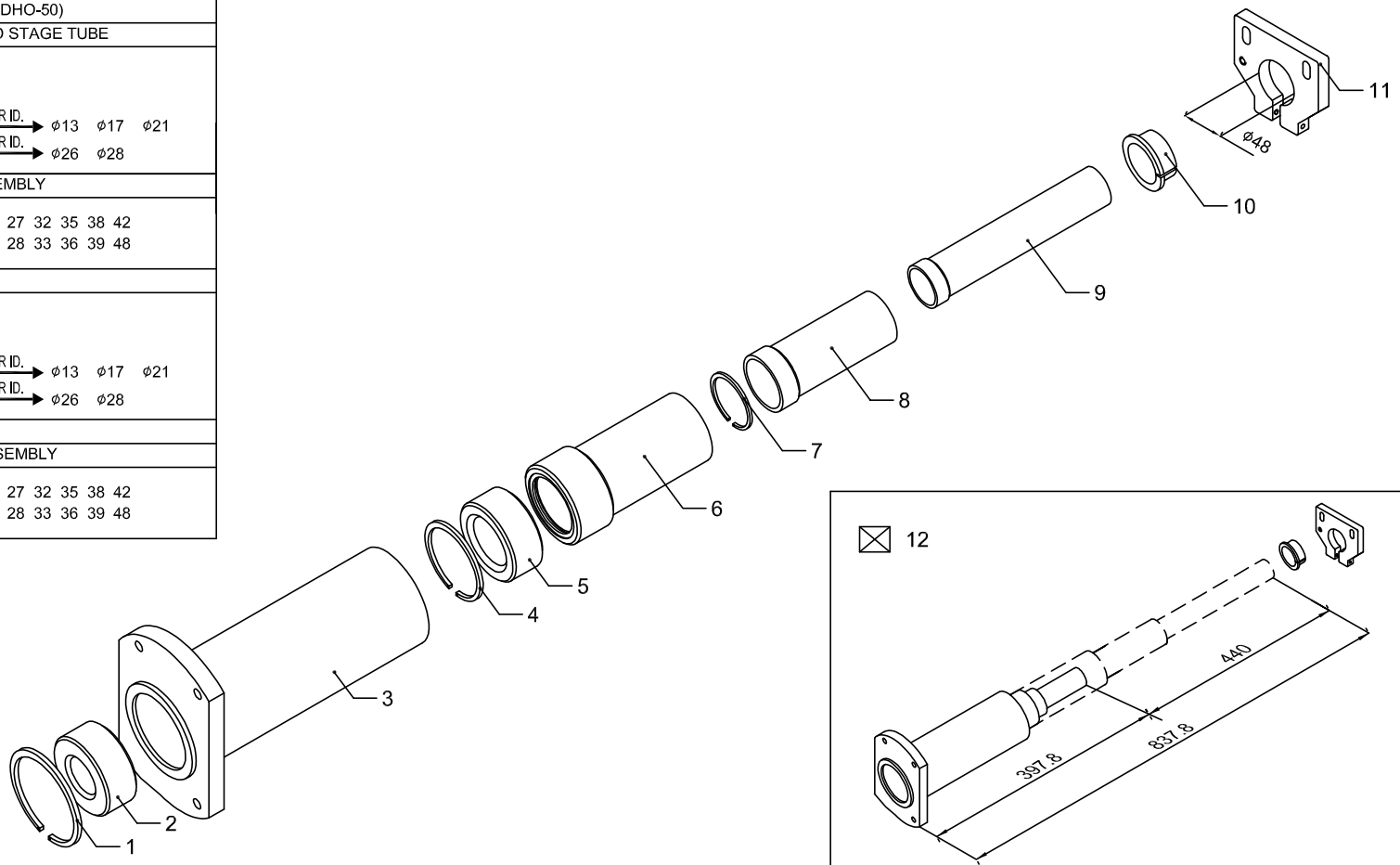


PATRIOT

400MM TELE NOSE ASSEMBLY

Tab. MEK206111__ 9

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. → 27 28 29 39 30 ϕ 28 26 21 17 13		
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. → 34 35 36 38 37 ϕ 28 26 21 17 13		
6	MEK20610510		440MM TELE NOSE 2ND STAGE TUBE
7	DHO-50		INTERNAL SNAP RING (DHO-50)
8	MEK206107__	1	440MM TELE NOSE 3RD STAGE TUBE
	NOMINAL DIAMETER D. → 12 13 ϕ35 ϕ25 FOR ID. → ϕ13 ϕ17 ϕ21 FOR ID. → ϕ26 ϕ28		
9	MEK206108__	1	4TH STAGE TUBE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 ϕ 13 17 21 26 28 33 36 39 48		
10	MEP2061__	1	Ring (12~38)
	NOMINAL DIAMETER D. → 12 13 ϕ35 ϕ25 FOR ID. → ϕ13 ϕ17 ϕ21 FOR ID. → ϕ26 ϕ28		
11	AV38TE0700	1	Plate
12	MEK206112__	1	440MM TELE NOSE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 ϕ 13 17 21 26 28 33 36 39 48		

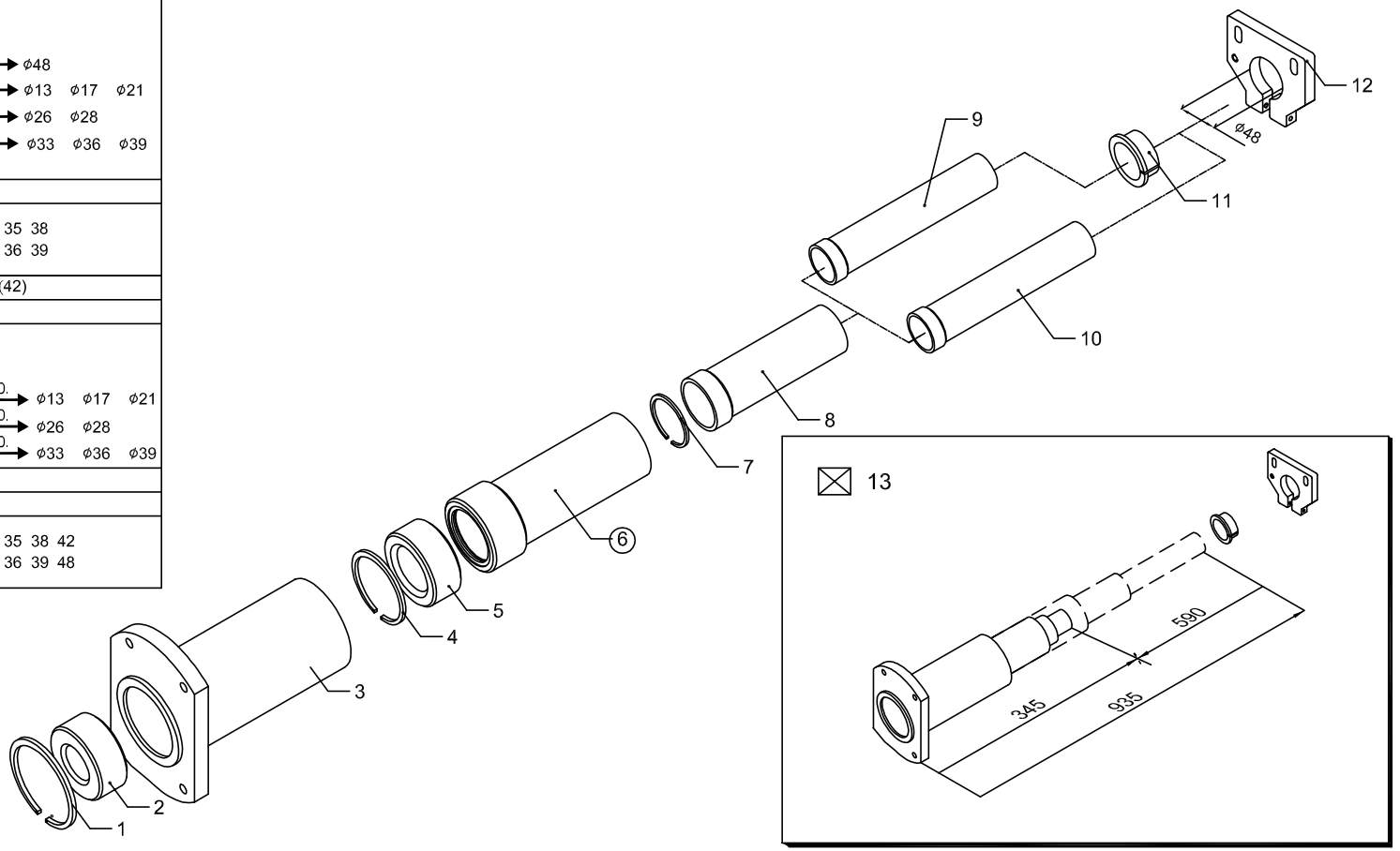


PATRIOT

440MM TELE NOSE ASSEMBLY

Tab. MEK206112__ 4

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	MEK206101	1	590MM 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 ø 39 36 33 28 26 21 17 13 43
6	MEK206205	1	590MM TELE NOSE 2ND STAGE TUBE
7	DHO-50	1	INTERNAL SNAP RING (DHO-50)
8	MEK206207__	1	590MM TELE NOSE 3RD STAGE TUBE
	NOMINAL DIAMETER D. →		11 12 13 44 ø45 ø35 ø25 ø48 FOR ID. → ø48 FOR ID. → ø13 ø17 ø21 FOR ID. → ø26 ø28 FOR ID. → ø33 ø36 ø39
9	MEK206208__	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
10	MEP206145	1	4TH STAGE TUBE ASSEMBLY (42)
11	MEP2061__	1	Ring (12~38)
	NOMINAL DIAMETER D. →		40 41 42 ø40 ø30 ø22 FOR ID. → ø13 ø17 ø21 FOR ID. → ø26 ø28 FOR ID. → ø33 ø36 ø39
11	AV38TE0700	1	Plate
12	MEK206113__	1	590MM TELE NOSE ASSEMBLY
	NOMINAL DIAMETER D. →		12 16 20 25 27 32 35 38 42 ø 13 17 21 26 28 33 36 39 48

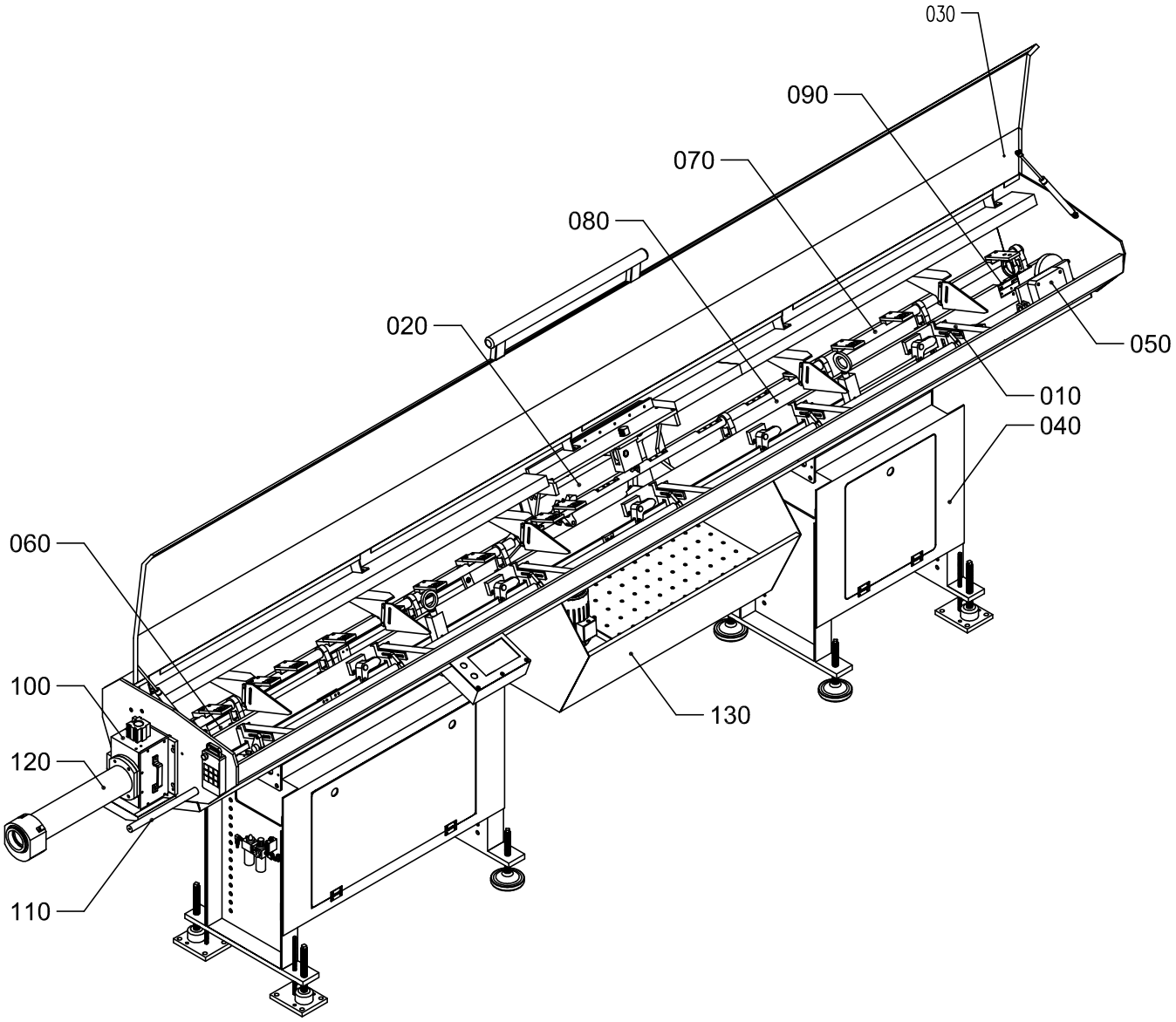


PATRIOT

590MM TELE NOSE ASSEMBLY

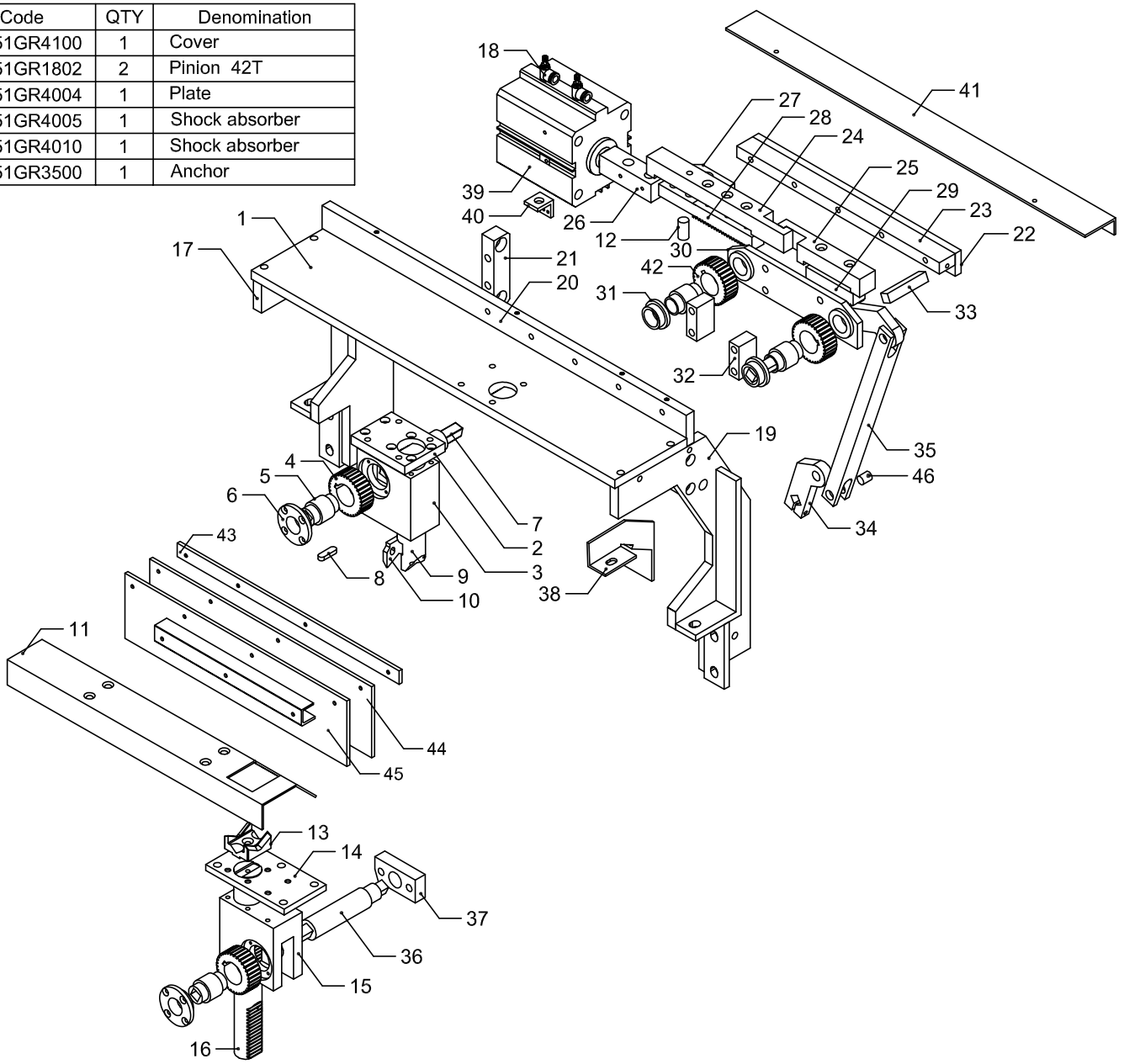
Tab. MEK206113__ 2

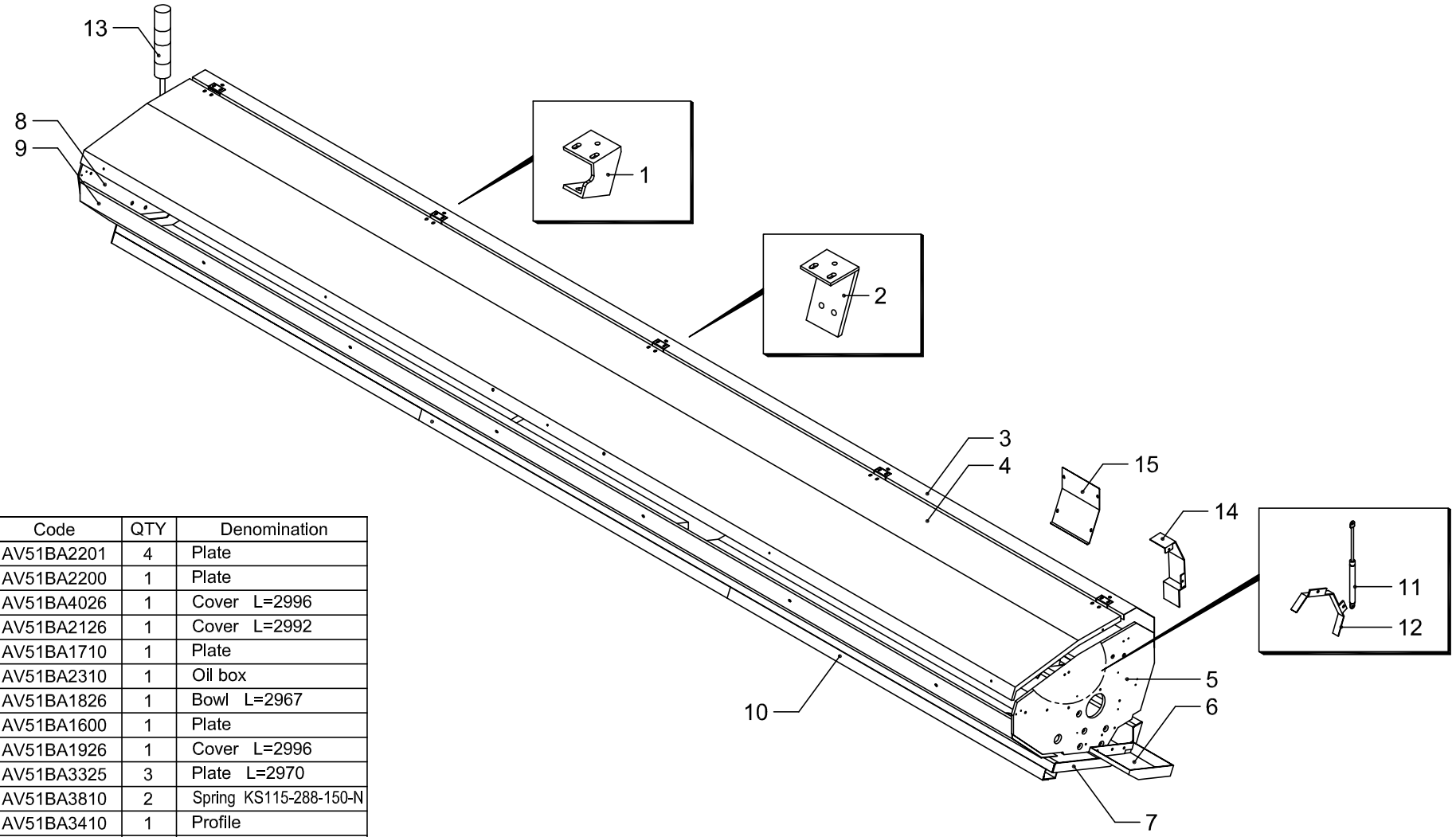
010	FRAME DEVICE
020	CLAMPING
030	COVER
040	BASES AND BEAM
050	FEED MOTOR DRIVE
060	CUTTING DEVICE
070	GUIDE CHANNEL SUPPORT
080	GUIDE CHANNEL
090	BAR PUSHER DEVICE
100	FIRST ANTI-VIBRATION DEVICE AND FIXED FRONT NOSE
110	SYCHRONIZATION DEVICE
120	TELESCOPIC FRONT NOSE
130	OIL TANK



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	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	AV51GR3000	1	Transmission rod
37	AV51GR2900	1	Anchor
38	AV51GR3150	1	Plate
39	A11130900	1	Cylinder SDA 80x100
40	AV51GR4900	1	Plate

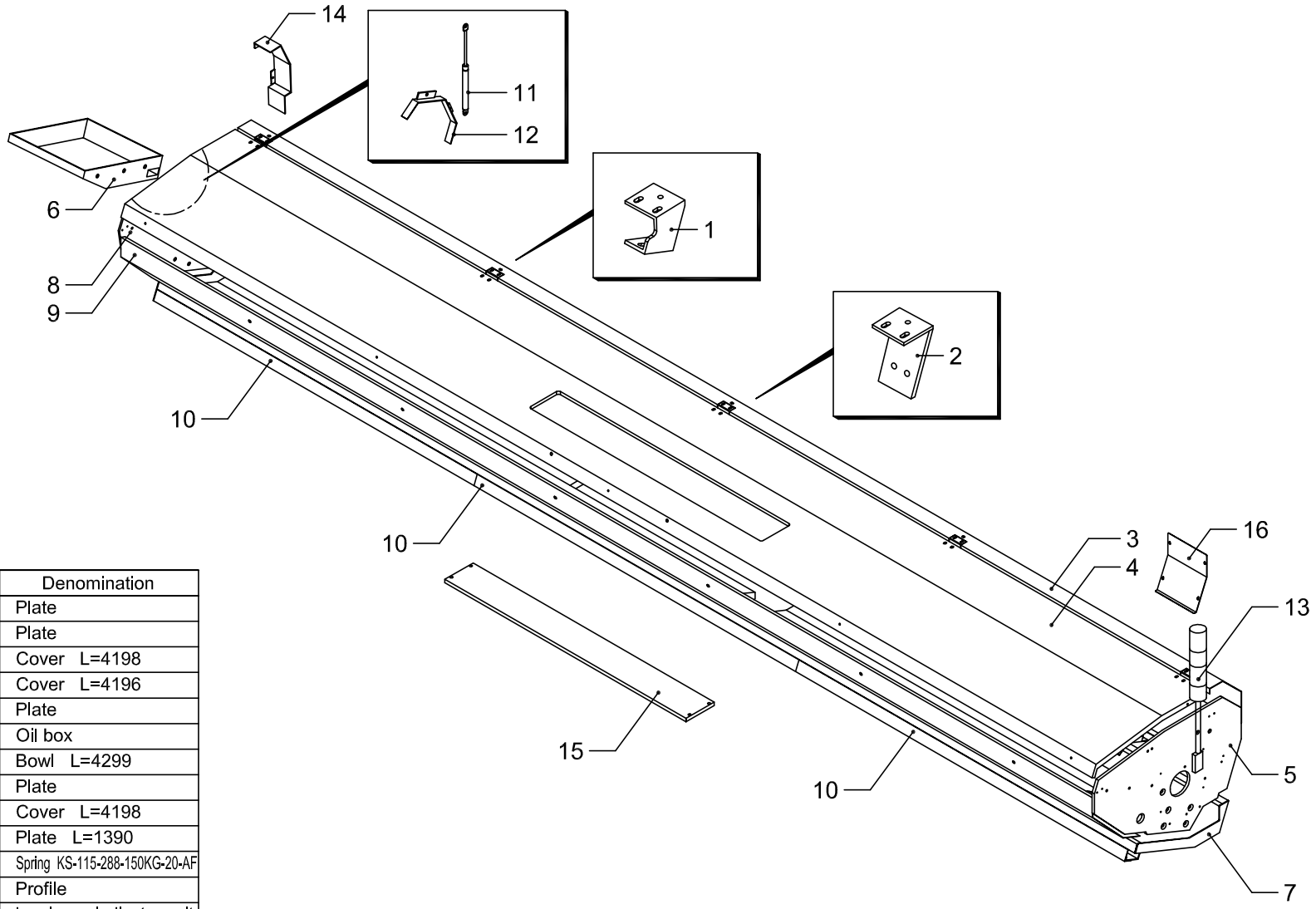
N.	Code	QTY	Denomination
41	AV51GR4100	1	Cover
42	AV51GR1802	2	Pinion 42T
43	AV51GR4004	1	Plate
44	AV51GR4005	1	Shock absorber
45	AV51GR4010	1	Shock absorber
46	AV51GR3500	1	Anchor





N.	Code	QTY	Denomination
1	AV51BA2201	4	Plate
2	AV51BA2200	1	Plate
3	AV51BA4026	1	Cover L=2996
4	AV51BA2126	1	Cover L=2992
5	AV51BA1710	1	Plate
6	AV51BA2310	1	Oil box
7	AV51BA1826	1	Bowl L=2967
8	AV51BA1600	1	Plate
9	AV51BA1926	1	Cover L=2996
10	AV51BA3325	3	Plate L=2970
11	AV51BA3810	2	Spring KS115-288-150-N
12	AV51BA3410	1	Profile
13	J630101	1	Luminous indicator unit
14	AV51BA3710	1	Profile
15	AV51BA4100	2	Access Panel

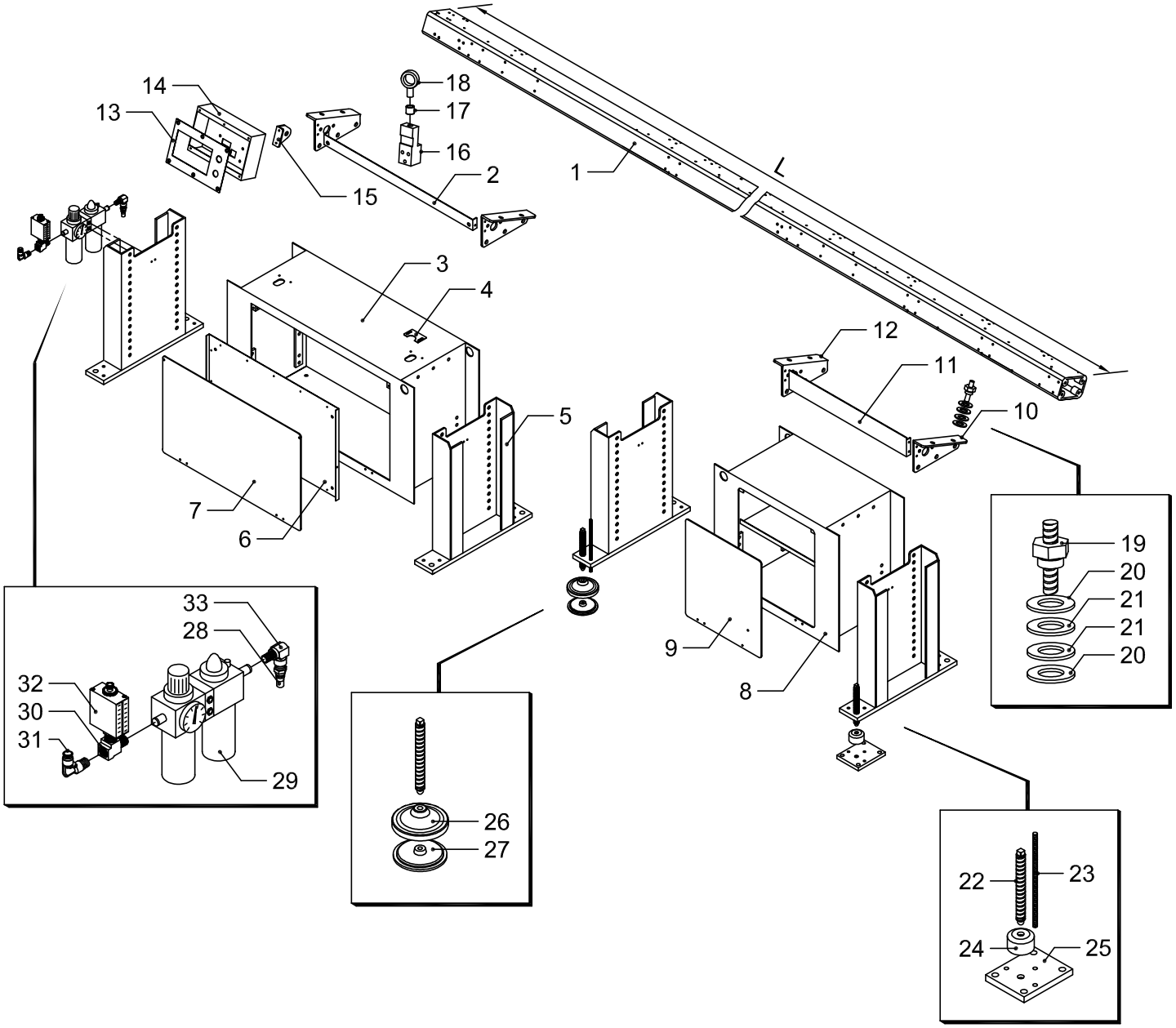
25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .



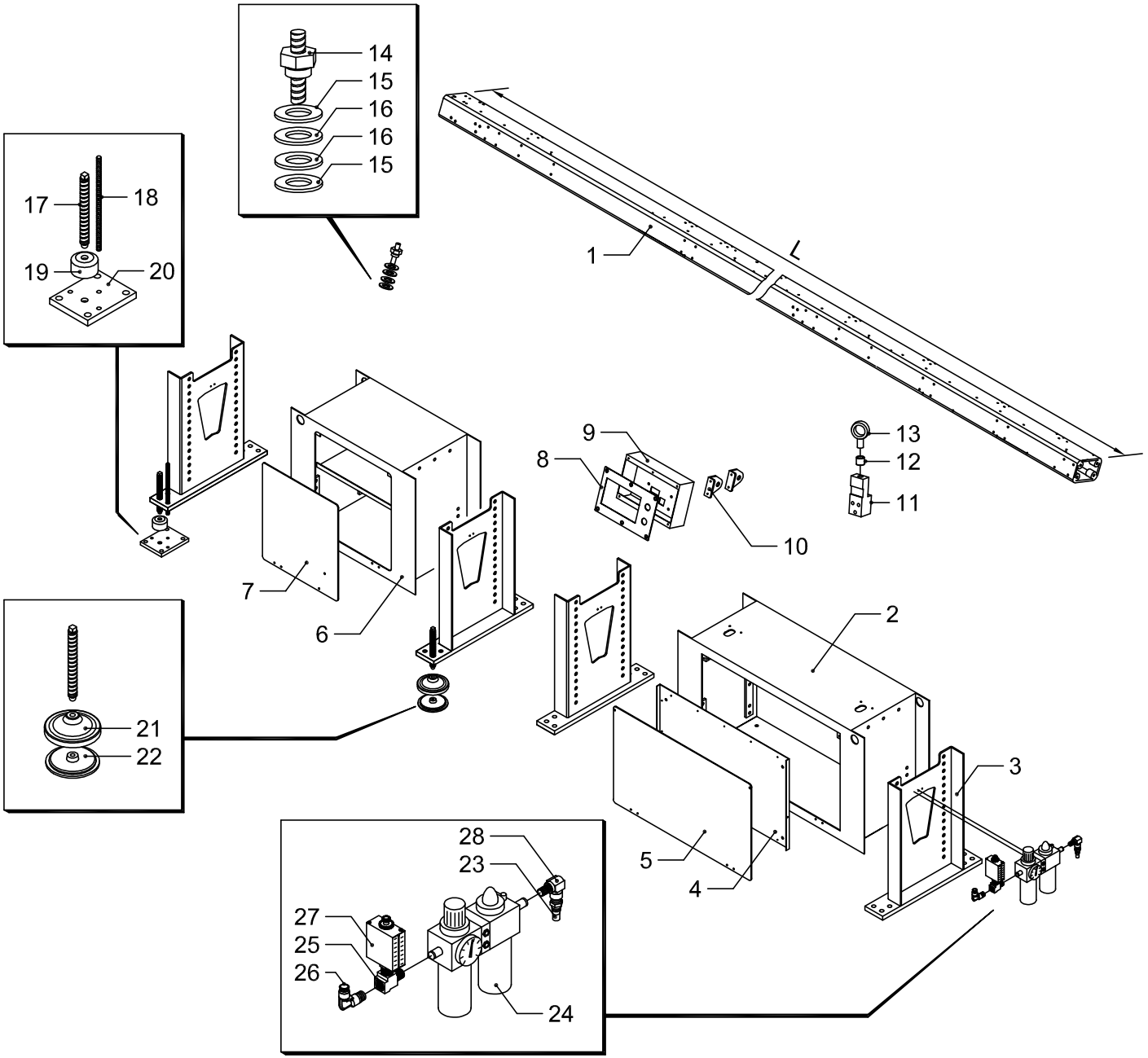
N.	Code	QTY	Denomination
1	AV51BA2201	4	Plate
2	AV51BA2200	1	Plate
3	AV51BA4038	1	Cover L=4198
4	AV51BA2137	1	Cover L=4196
5	AV51BA1710	1	Plate
6	AV51BA2310	1	Oil box
7	AV51BA1838	1	Bowl L=4299
8	AV51BA1610	1	Plate
9	AV51BA1938	1	Cover L=4198
10	AV51BA3337	3	Plate L=1390
11	AV51BA3800	2	Spring KS-115-288-150KG-20-AF
12	AV51BA3410	1	Profile
13	J630101	1	Luminous indicator unit
14	AV51BA3710	1	Profile
15	AV51BA2103	1	Plexiglass window
16	AV51BA4100	2	Access Panel

25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

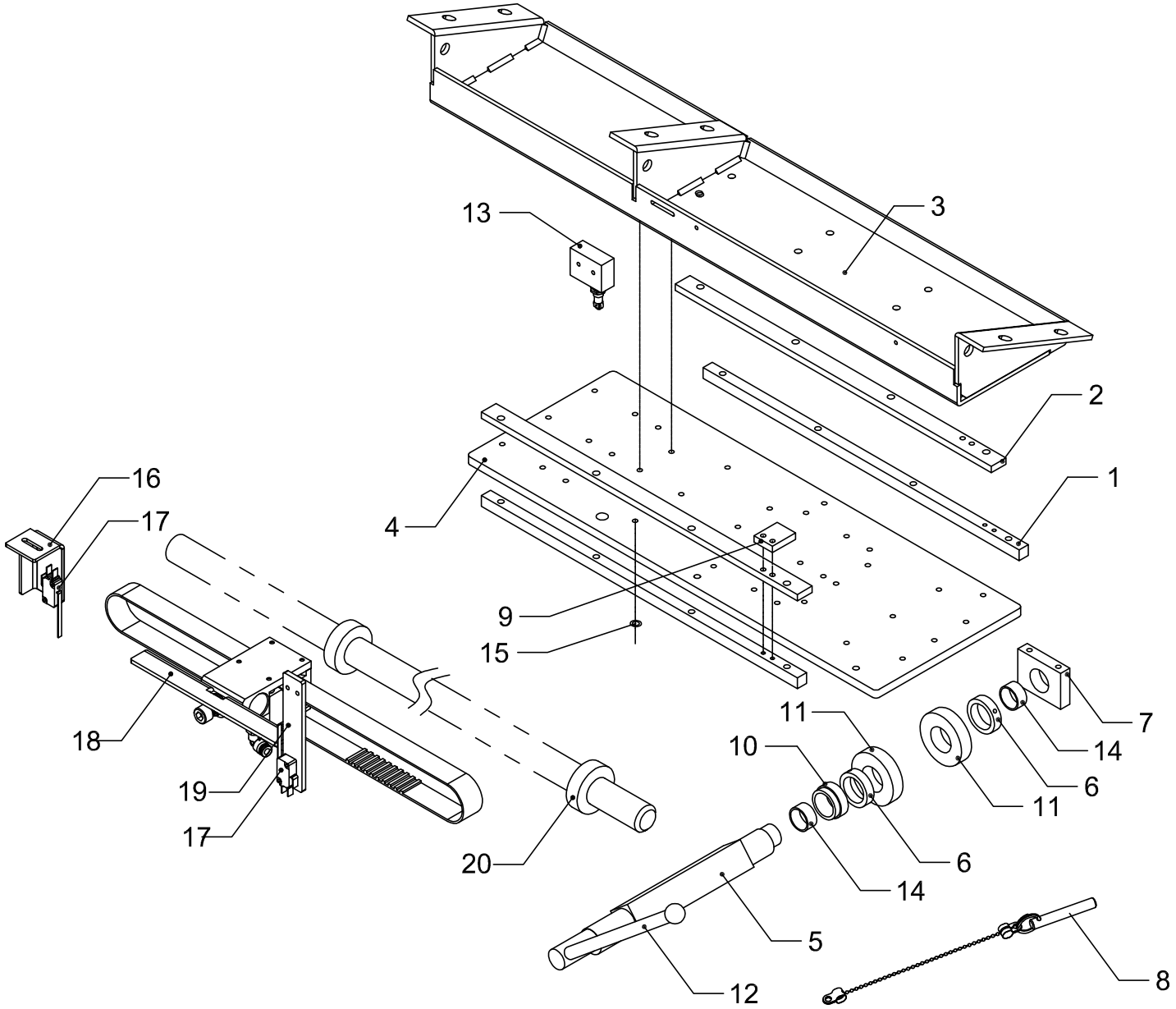
N.	Code	QTY	Denomination
1	AV51CH0138	1	Beam L=4200
2	AV51BA0701	1	Cover
3	AV51BA0100	1	Base
4	AV51BA0101	2	Base
5	AV51BA0410	4	Support
6	AV51BA0300	1	Panel
7	AV51BA0200	1	Door
8	AV51BA0500	1	Base
9	AV51BA0501	1	Door
10	AV51BA0600	2	Support
11	AV51BA0702	1	Cover
12	AV51BA0700	2	Support
13	AV51BA2800	1	Key-board
14	AV51BA2500	1	Housing
15	AV51BA2600	2	Support
16	AV51BA2900	2	Support
17	AV51BA3301	2	Bushing
18	AV51BA3300	2	Eyebolt
19	AV51BA0800	14	Column
20	AV51BA0900	28	Washer
21	AV51BA1000	28	Washer
22	AV51BA1400	8	Screw
23	AV51BA1500	4	Tie rod
24	AV51BA1200	4	Plate
25	AV51BA1100	4	Plate
26	AV51BA3000	4	Plug
27	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	AV51CH0138	1	Beam L=4200
2	AV51BA0140	1	Base
3	AV51BA0410	4	Support
4	AV51BA0300	1	Panel
5	AV51BA0200	1	Door
6	AV51BA0540	1	Base
7	AV51BA0501	1	Door
8	AV51BA2800	1	Key-board
9	AV51BA2500	1	Housing
10	AV51BA2600	2	Support
11	AV51BA2900	2	Support
12	AV51BA3301	2	Bushing
13	AV51BA3300	2	Eyebolt
14	AV51BA0800	14	Column
15	AV51BA0900	28	Washer
16	AV51BA1000	28	Washer
17	AV51BA1400	8	Screw
18	AV51BA1500	4	Tie rod
19	AV51BA1200	4	Plate
20	AV51BA1100	4	Plate
21	AV51BA3000	4	Plug
22	AV51BA3100	4	Plug
23	AB110300	1	Joint
24	A12110300	1	Pneumatically-actuated electrical microswitch PM-20
25	A15140200	1	Connection 1/4"
26	A13120500	1	Connection 1/4"xø8
27	A12140400	1	Pressure switch
28	A17110300	1	90° Connection 1/4"x1/4"



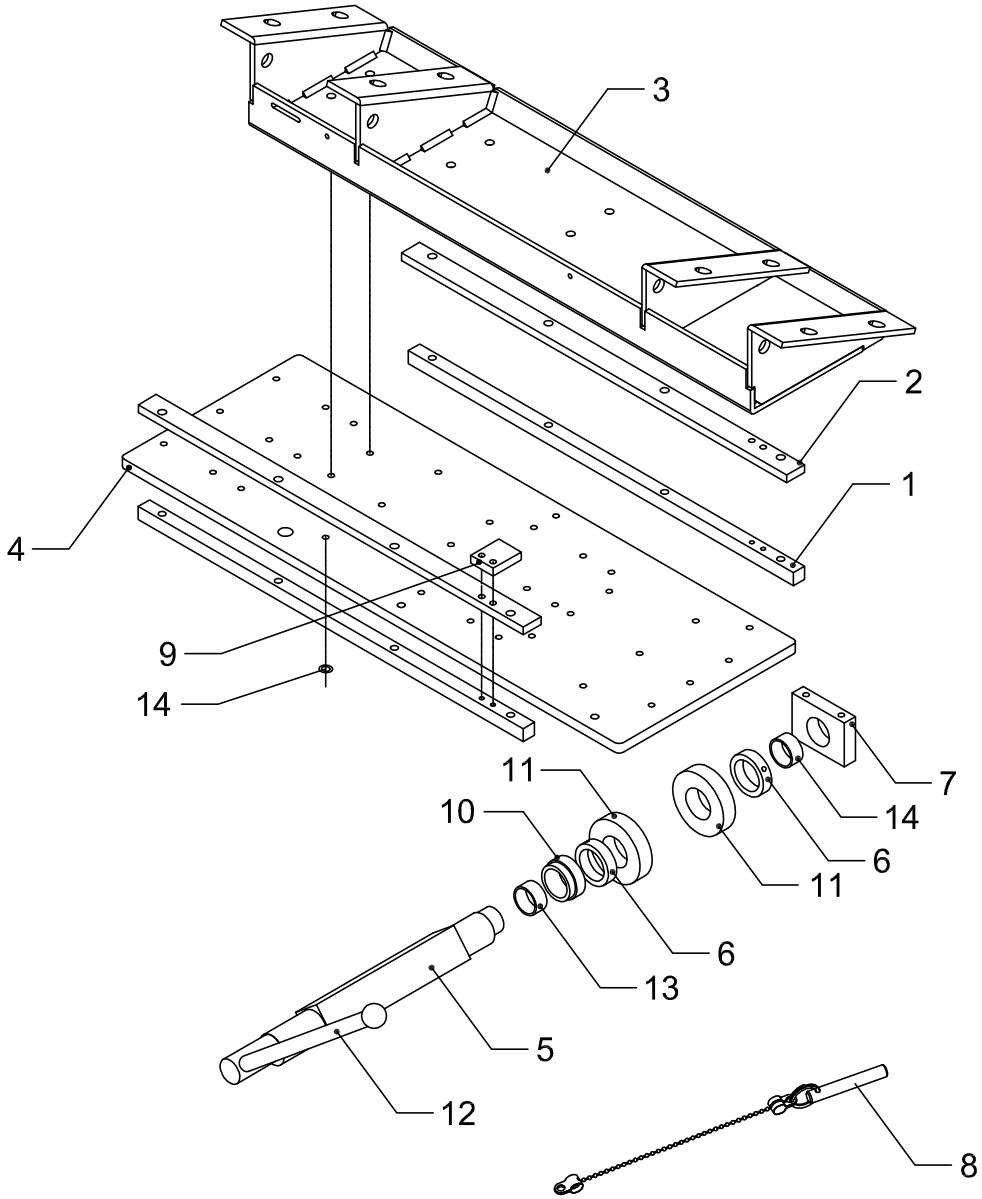
N.	Code	QTY	Denomination
1	AV51MZ0200	2	Plate
2	AV51MZ0300	2	Support
3	AV51MZ0420	1	Plate
4	AV51MZ0500	1	Plate
5	AV51MZ0610	1	Arbor
6	AV51MZ0700	2	Ring
7	AV51MZ0800	1	Block
8	AV51MZ000B	1	Bolt
9	AV51MZ1000	1	Anchor
10	AV51BA0810	1	Bushing
11	B6207ZZ	2	Bearing
12	P35201200	1	Handle 1160-M14-250
13	J310409	1	Microswitch TZ-7311
14	BSF2815	2	Bearing SF-2815
15	IEN0813001	6	Gasket (S8)
16	ADP779810028	1	Support
17	J310419	2	Microswitch V-15-1A5
18	ADP779810026	1	Support
19	ADP779810027	1	Support
20	AV51MA3100	1	Ring
21	AV51MZ008A	1	Front tracking system



PATRIOT-SX

FRONT TRACKING SYSTEM

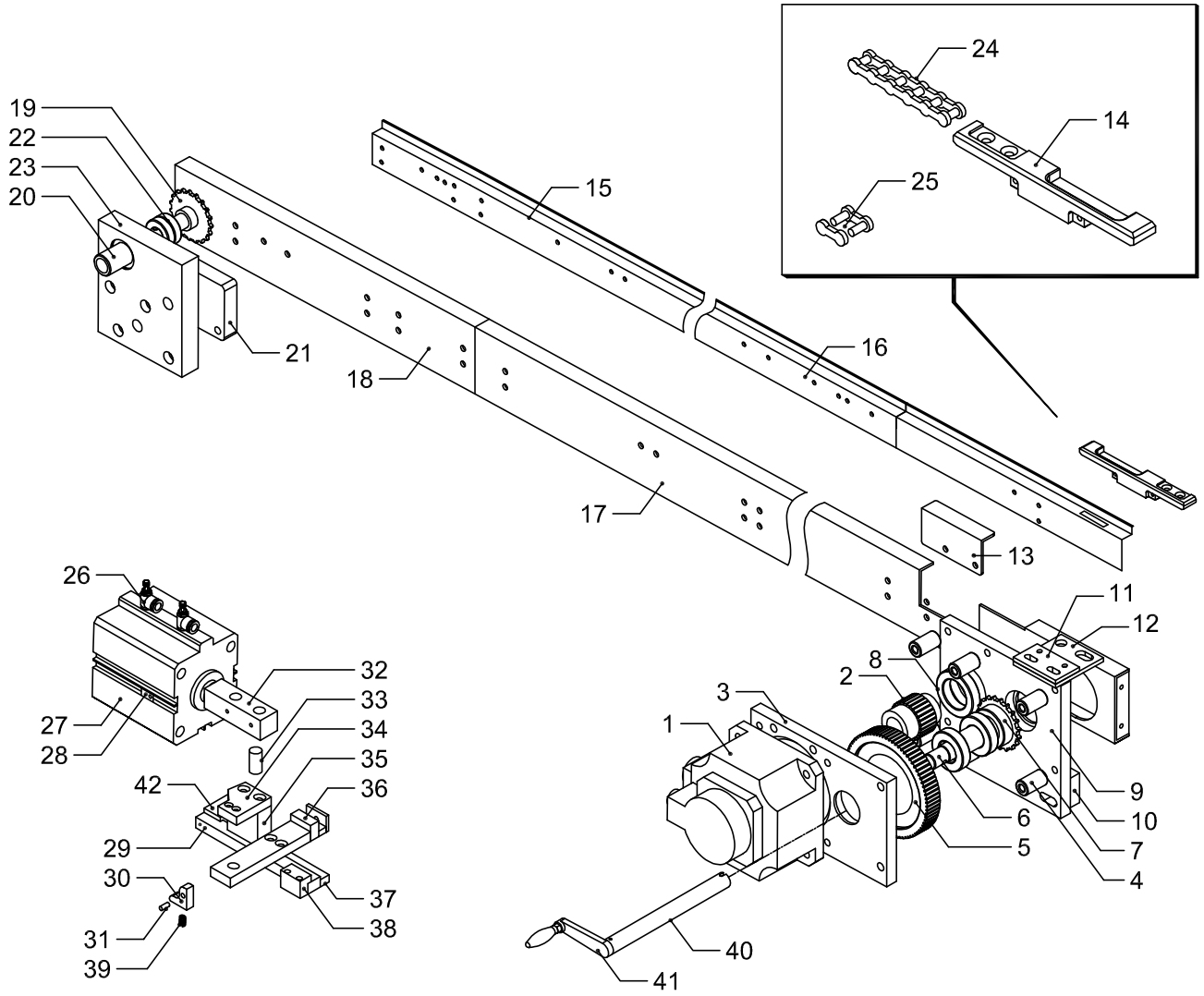
Tab. 046 1



N.	Code	QTY	Denomination
1	AV51MZ0200	2	Plate
2	AV51MZ0300	2	Support
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	IEN0813001	6	Gasket (S8)
15	AV51MZ009A	1	Back tracking system

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 L=1094
25 / 16	AV51DR1113	1		Chain guide L=2830
37 / 16	AV51DR1111	1		Chain guide L=2925
17	AV51DR1010		1	Chain guide L=2980
25 / 18	AV51DR1013	1		Chain guide L=2996
37 / 18	AV51DR1011	1		Chain guide L=1215
19	AV51DR0700	1		Sprocket 39T
20	AV51DR0900	1		Spacer
21	AV51DR0801	1		Support
22	B6003ZZ	2		Bearing
23	AV51DR0810	1		Support
25 / 24	AV51DR1601	1		Chain L=617P
37 / 24	AV51DR1700	1		Chain 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	AV51GR4610	1		Extensive block
35	AV51GR4300	1		Push block
36	AV51GR4410	1		OAM block
37	AV51GR3202	1		Guide block 2
38	AV51GR3201	1		Guide block

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

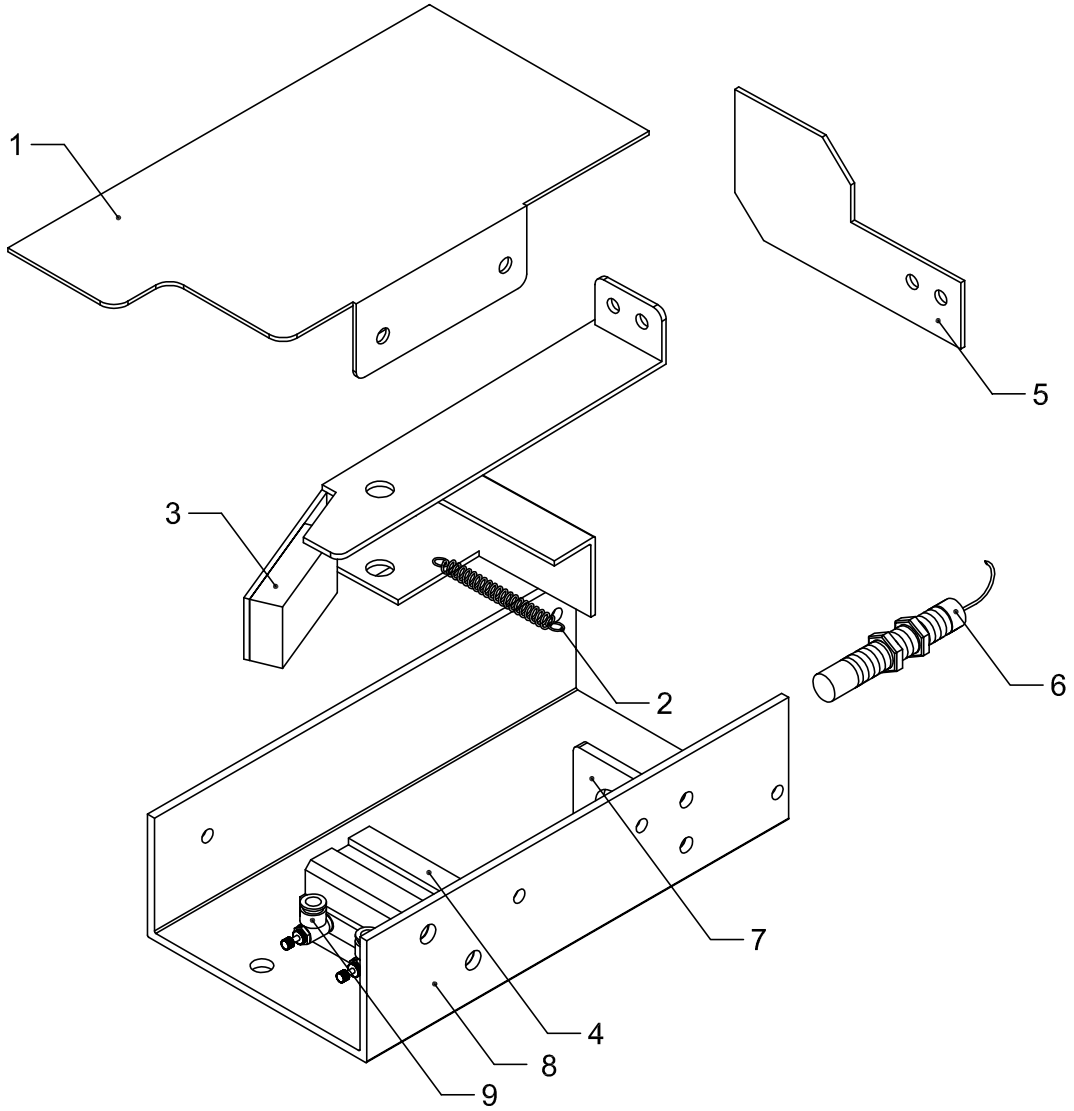


25 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

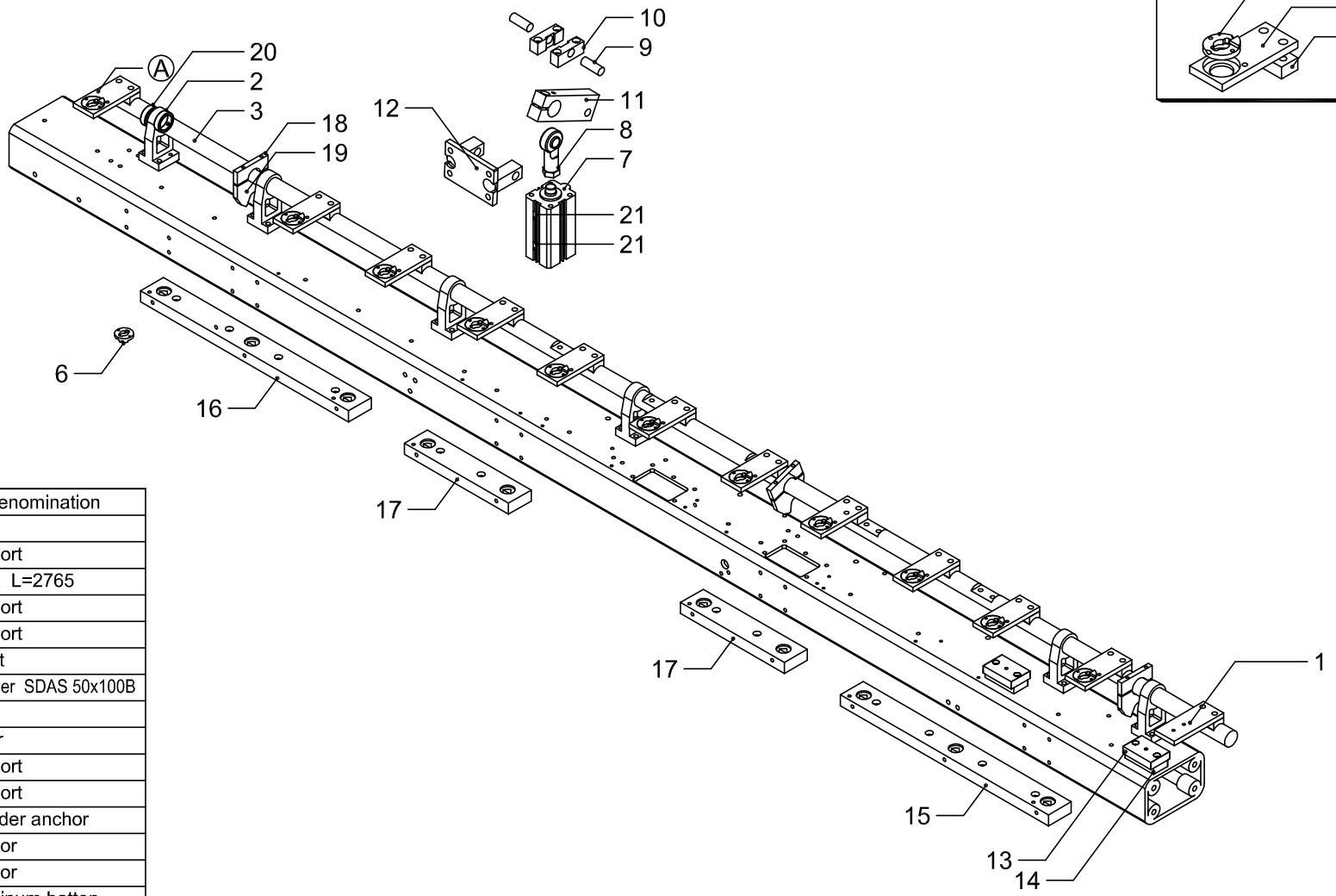
PATRIOT-SX

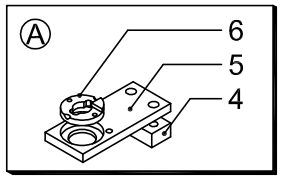
FEED MOTOR DRIVE

Tab. 050 7



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





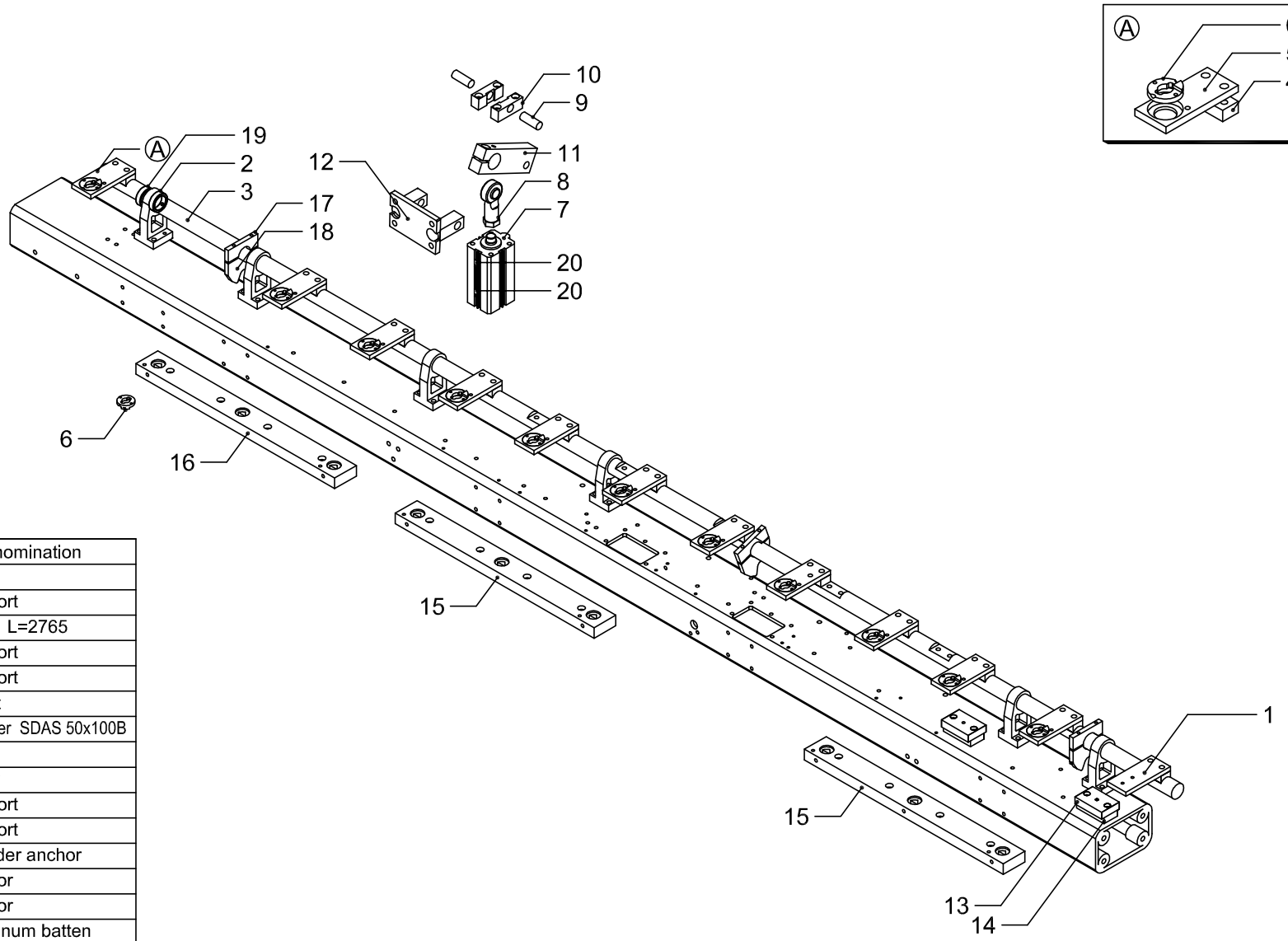
N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	7	Support
3	AV51CH1525	1	Shaft L=2765
4	AV51CH0900	12	Support
5	AV51CH0700	11	Support
6	AV51CH0800	21	Collet
7	A11130600	1	Cylinder SDAS 50x100B
8	BPHS18	1	Joint
9	AV51CH1701	2	Arbor
10	AV51CH1700	2	Support
11	AV51CH1900	1	Support
12	AV51CH1800	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

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

PATRIOT-SX

GUIDE CHANNEL SUPPORT 25 L

Tab. 070 1



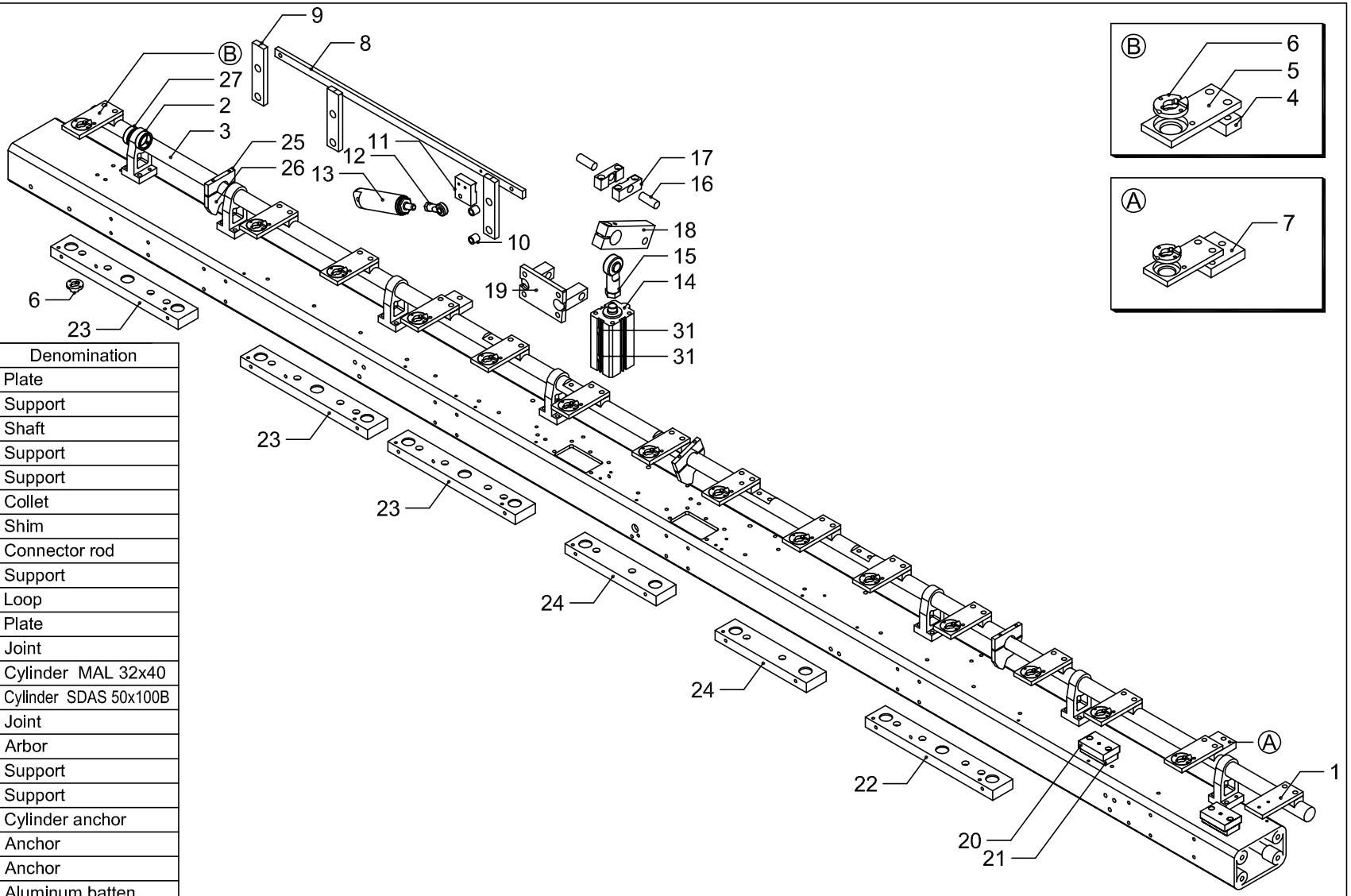
N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	7	Support
3	AV51CH1525	1	Shaft L=2765
4	AV51CH0900	12	Support
5	AV51CH0700	11	Support
6	AV51CH0800	20	Collet
7	A11130600	1	Cylinder SDAS 50x100B
8	BPHS18	1	Joint
9	AV51CH1701	2	Arbor
10	AV51CH1700	2	Support
11	AV51CH1900	1	Support
12	AV51CH1800	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

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

PATRIOT-SX

GUIDE CHANNEL SUPPORT 25 LL

Tab. 071 1



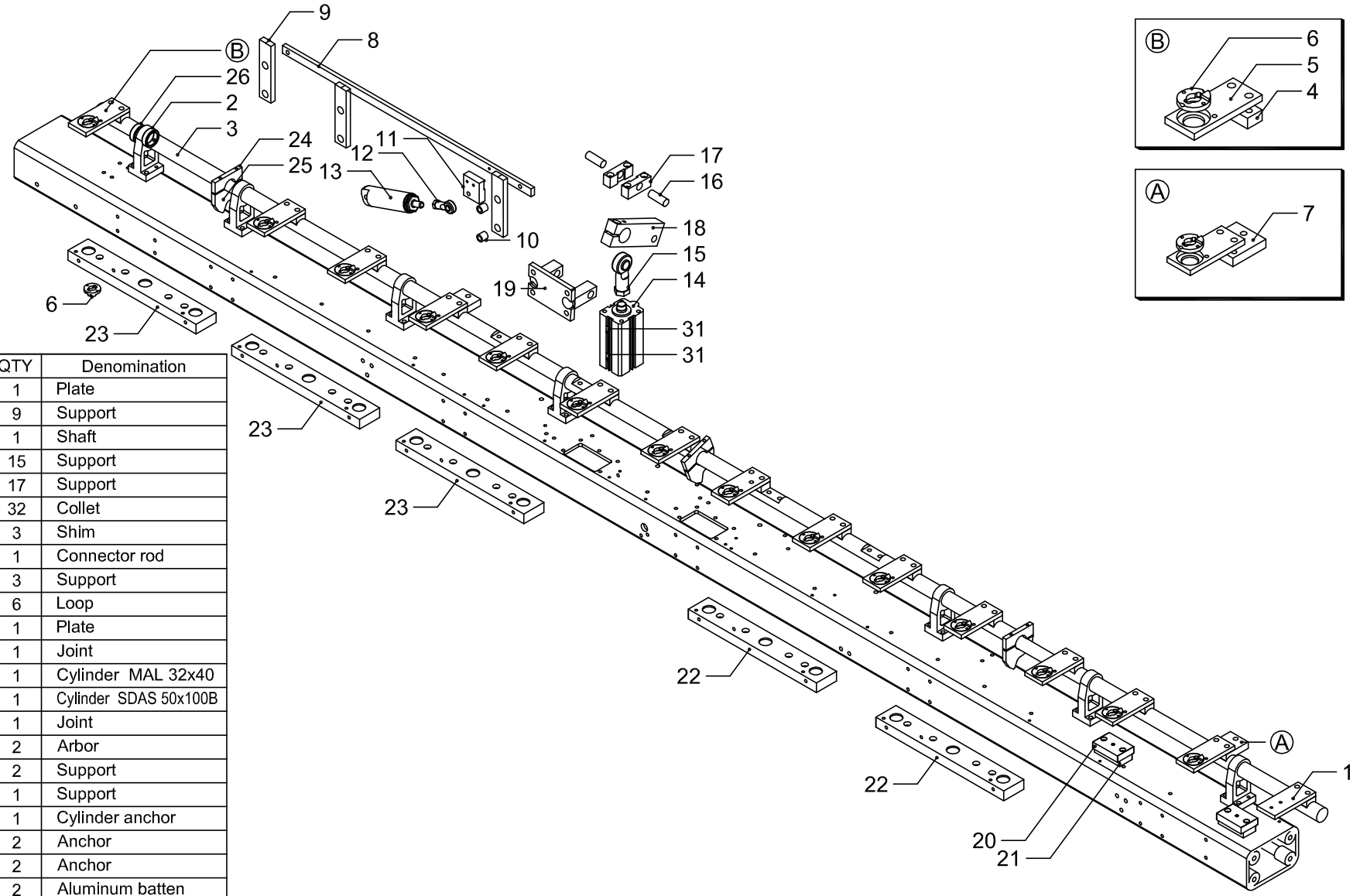
N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	9	Support
3	AV51CH1537	1	Shaft
4	AV51CH0900	15	Support
5	AV51CH0700	17	Support
6	AV51CH0800	33	Collet
7	AV51CH1000	3	Shim
8	AV51CH1237	1	Connector rod
9	AV51CH1100	3	Support
10	AV51CH1600	6	Loop
11	AV51CH1300	1	Plate
12	BPHS10	1	Joint
13	A11111300	1	Cylinder MAL 32x40
14	A11130600	1	Cylinder 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

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

PATRIOT-SX

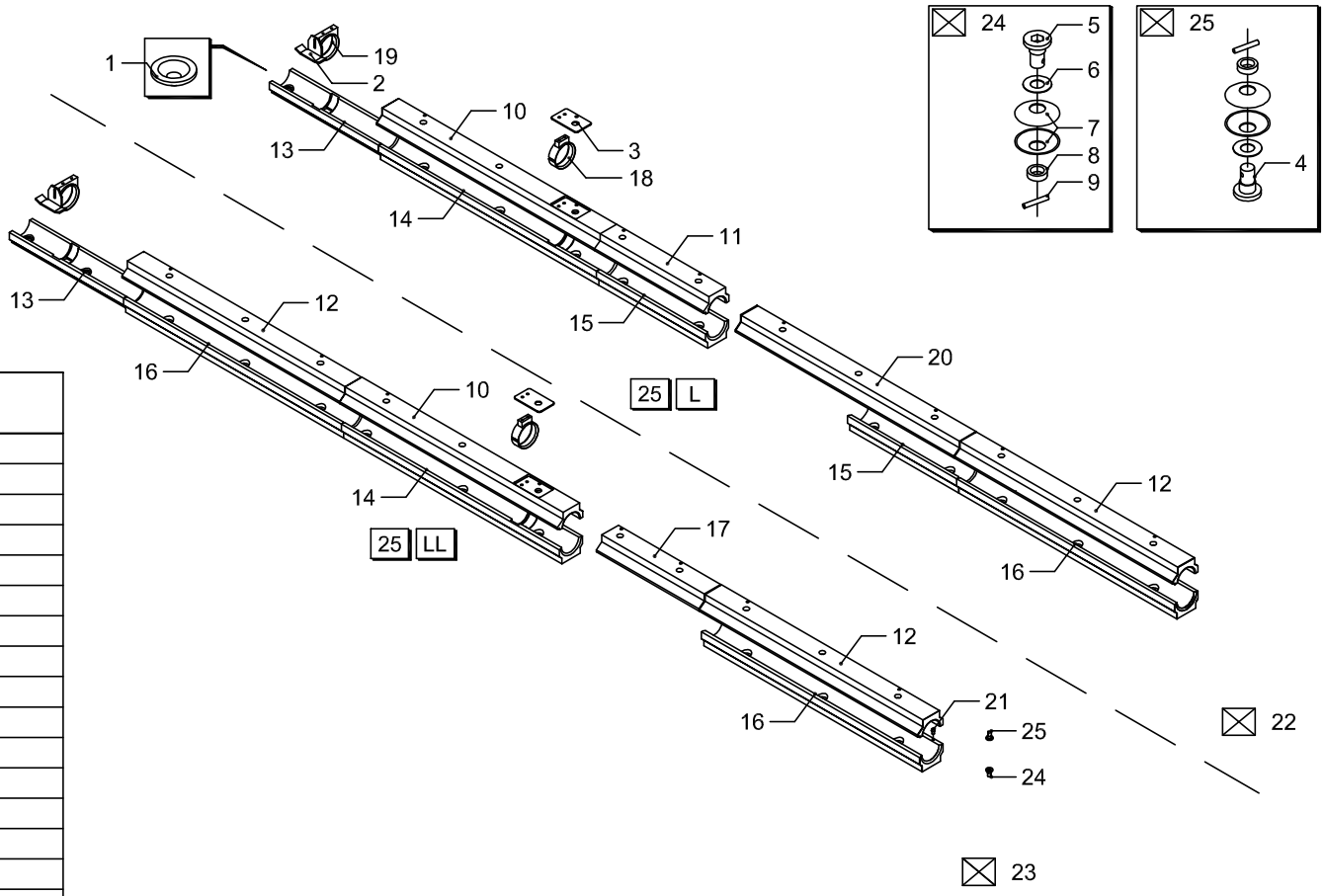
GUIDE CHANNEL SUPPORT [37] [L]

Tab. 072 3



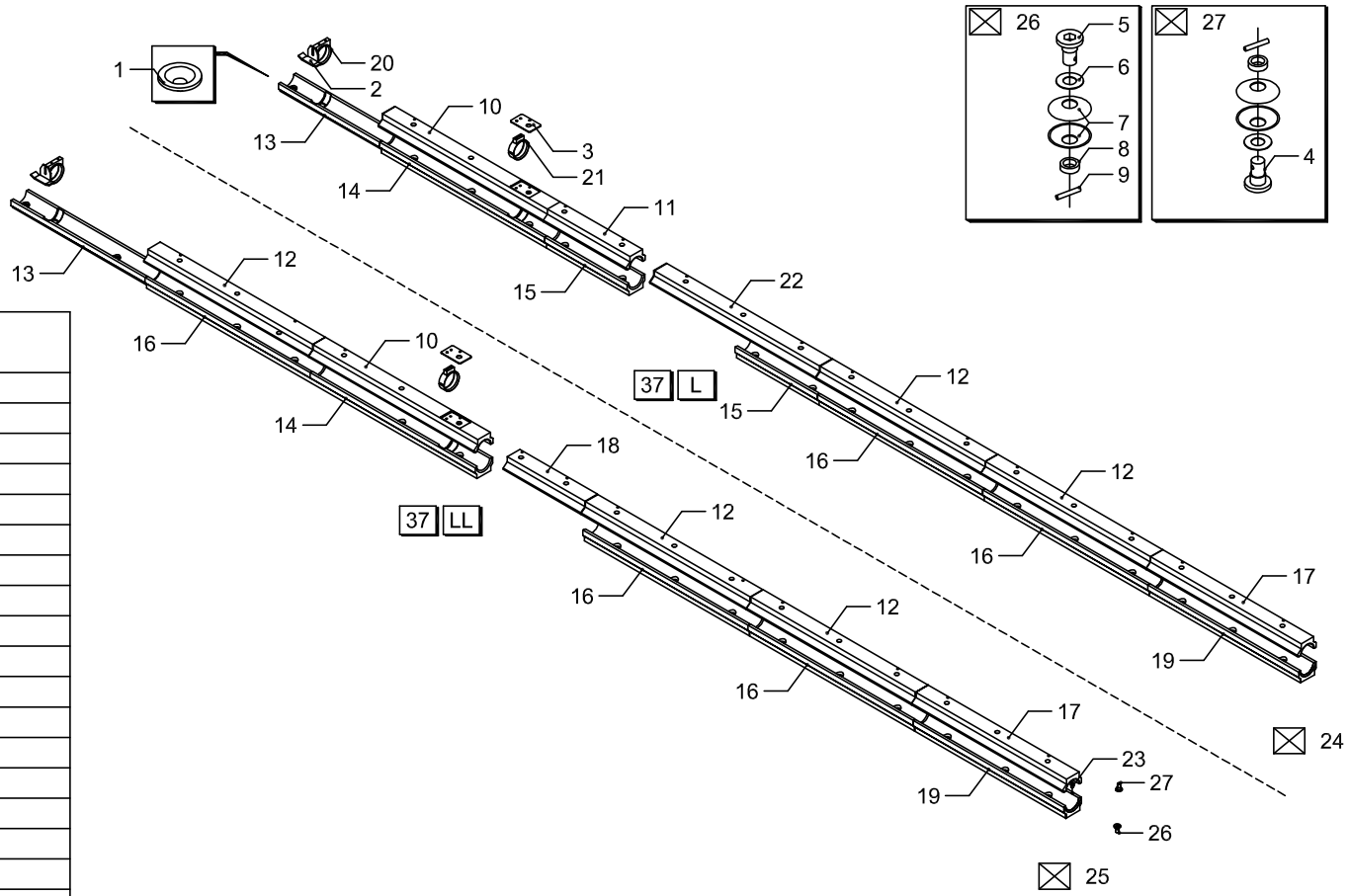
N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	9	Support
3	AV51CH1537	1	Shaft
4	AV51CH0900	15	Support
5	AV51CH0700	17	Support
6	AV51CH0800	32	Collet
7	AV51CH1000	3	Shim
8	AV51CH1237	1	Connector rod
9	AV51CH1100	3	Support
10	AV51CH1600	6	Loop
11	AV51CH1300	1	Plate
12	BPHS10	1	Joint
13	A11111300	1	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	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

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



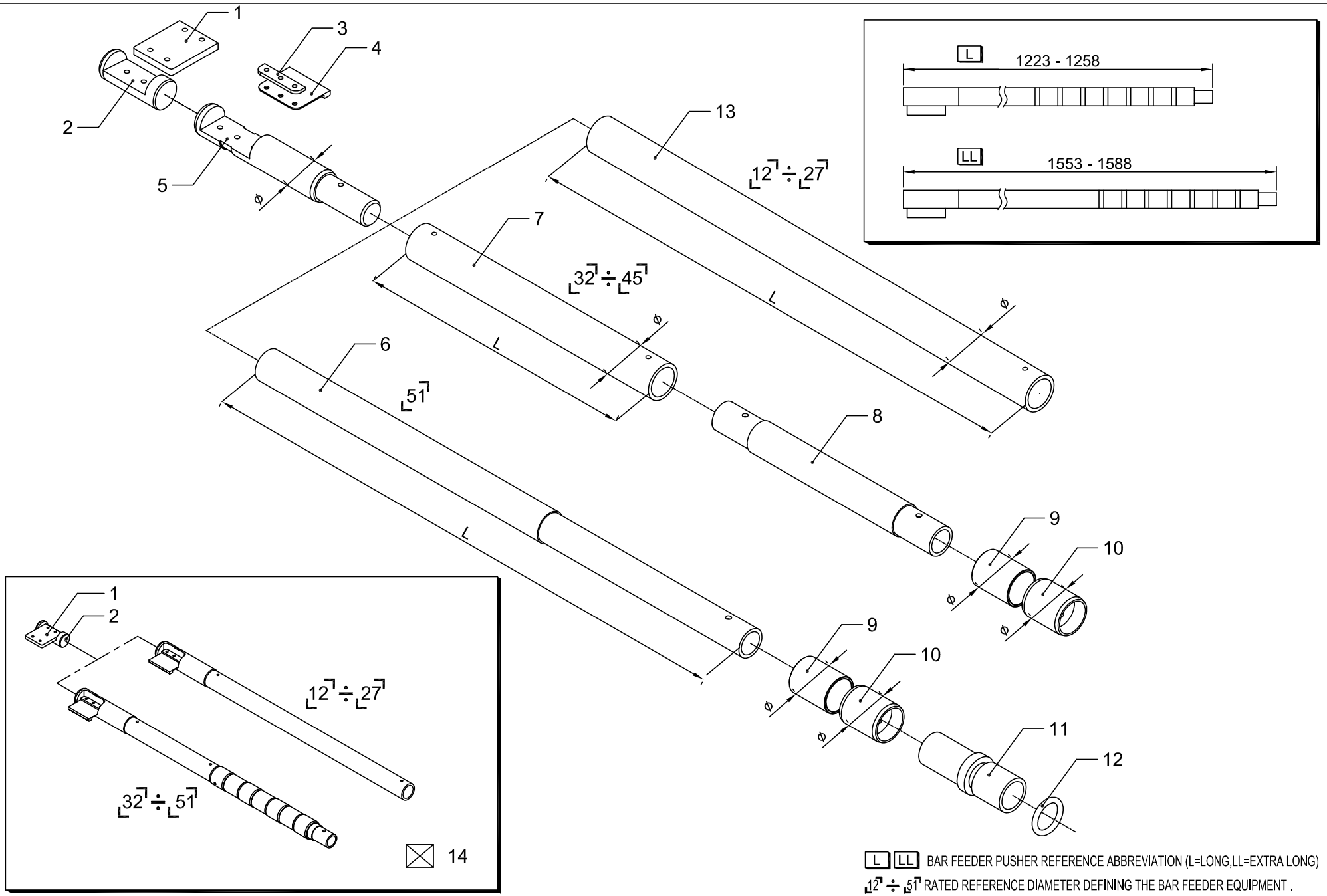
N.	Code	QTY		Denomination
		L	LL	
1	AV51CH3300	2	2	Fixed ring
2	AV51CH3600	1	1	Support
3	AV51CH2701	1	1	Support
4	AV51CH3200	11	11	Screw
5	AV51CH3100	10	9	Screw
6	AV51CH3900	21	20	Spacer
7	BB25	42	40	Bellerille washer
8	AV51CH3800	21	20	Bushing
9	ZS080425	21	20	Pin
10	AV__CH2710	1	1	Upper guide channel
11	AV__CH2610	1		Upper guide channel
12	AV__CH2500	1	2	Upper guide channel
13	AV__CH2400	1	1	Lower guide channel
14	AV__CH2210	1	1	Lower guide channel
15	AV__CH2110	2		Lower guide channel
16	AV__CH2000	1	2	Lower guide channel
17	AV__CH2910		1	Upper guide channel
18	AV__CH3400	1	1	Support
19	AV__CH3500	1	1	Support
20	AV__CH2501	1		Upper guide channel
21	AV51CH4200	10	12	Arbor (12~37 Type)
22	AV__CH0025-LR	1		Guide channel
23	AV__CH0025-LLR	1		Guide channel
	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		
24	AV51CH310A	10	9	Build-in fitting set
25	AV51CH320A	11	11	Build-in fitting set

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



N.	Code	QTY		Denomination
		L	LL	
1	AV51CH3300	2	2	Fixed ring
2	AV51CH3600	1	1	Support
3	AV51CH2701	1	1	Support
4	AV51CH3200	17	17	Screw
5	AV51CH3100	16	15	Screw
6	AV51CH3900	33	32	Spacer
7	BB25	66	64	Bellerille washer
8	AV51CH3800	33	32	Bushing
9	ZS080425	33	32	Pin
10	AV__CH2710	1	1	Upper guide channel
11	AV__CH2610	1		Upper guide channel
12	AV__CH2500	2	3	Upper guide channel
13	AV__CH2400	1	1	Lower guide channel
14	AV__CH2210	1	1	Lower guide channel
15	AV__CH2110	2		Lower guide channel
16	AV__CH2000	2	3	Lower guide channel
17	AV__CH2810	1	1	Upper guide channel
18	AV__CH2910		1	Upper guide channel
19	AV__CH2310	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	AV51CH4200	16	18	Arbor (12~37 Type)
24	AV__CH0037-LR	1		Lower guide channel
25	AV__CH0037-LLR	1		Lower guide channel
	NOMINAL DIAMETER D.	12 16 20 25 27 32 35 37 38 42 45 51		
	ø	13 17 21 26 28 33 36 38 39 43 46 52		
26	AV51CH310A	16	15	Build-in fitting set
27	AV51CH320A	17	17	Build-in fitting set

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



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

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

PATRIOT-SX

BAR PUSHER DEVICE

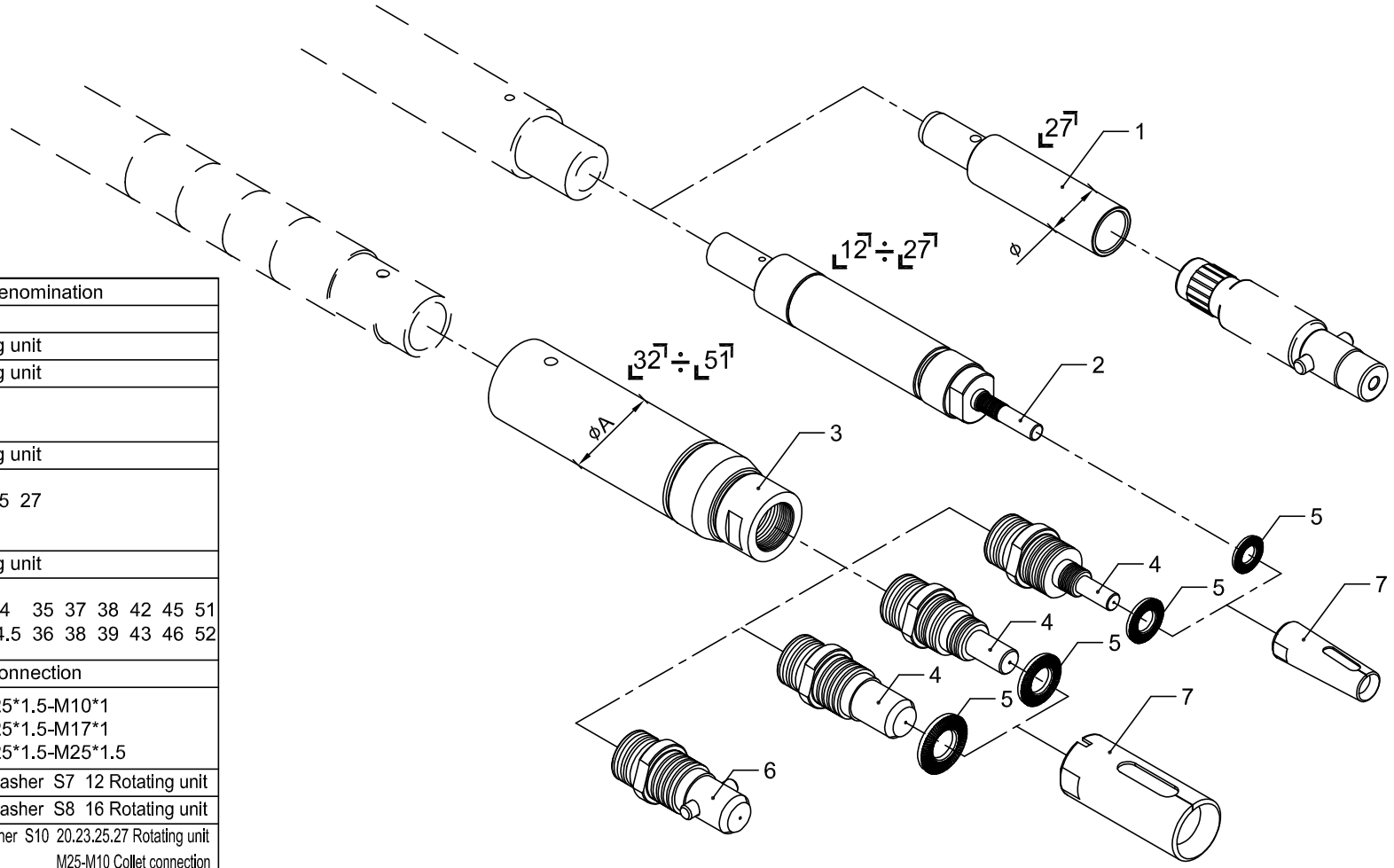
Tab. 090 8

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 11.6 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 / 19 / 20
	AV51PB0300	1	Anchor 25 - 51
4	AV20PB0200	1	Flag 12 / 20
	AV51PB0200	1	Flag 23 / 51
5	AV__PB0120	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	AV51PB0400	1	Bar pusher ϕ50.8 L=1005 (51.60 TYPE)
	AV51PB0500		Bar pusher ϕ50.8 L=1335 (51.60 TYPE)
7	AV__PB0400	1	Bar pusher L=642
	AV__PB0500	1	Bar pusher L=972
	NOMINAL DIAMETER D. → 32 35 37 38 42 45 ϕ 30 34 35 38 40 45		
8	AV__PB0600	1	Bar pusher
	NOMINAL DIAMETER D. → 32 35 37 38 42 45 ϕ 27.4 30 32 32 35 40		
9	AV__PB0700	3	Spacer
	NOMINAL DIAMETER D. → 32 35 37 38 42 45 51 ϕ31.5 34 36 37 40 43 49		
10	AV__PB0800	4	Bronze ring
	NOMINAL DIAMETER D. → 32 35 37 38 42 45 51 ϕ 32 34.5 37 38 41.5 44.3 51		
11	AV51PB1100	1	Connector rod
12	AV51PB1200	1	Piston

N.	Code	QTY	Denomination
13	AV__PB0400	1	Bar pusher
	AV__PB0500	1	Bar pusher
	NOMINAL DIAMETER D. → 12 16 20 25 27 ϕ 12 16 20 25.2 27		
14	AV__PB0010-__R	1	Bar pusher device
	TYPE. → L [L] LL [LL] NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 36 37 38 42 45 51 60 ϕ 12 16 20 25 27 32 34.5 36 37 38 41.5 44.3 51 60		

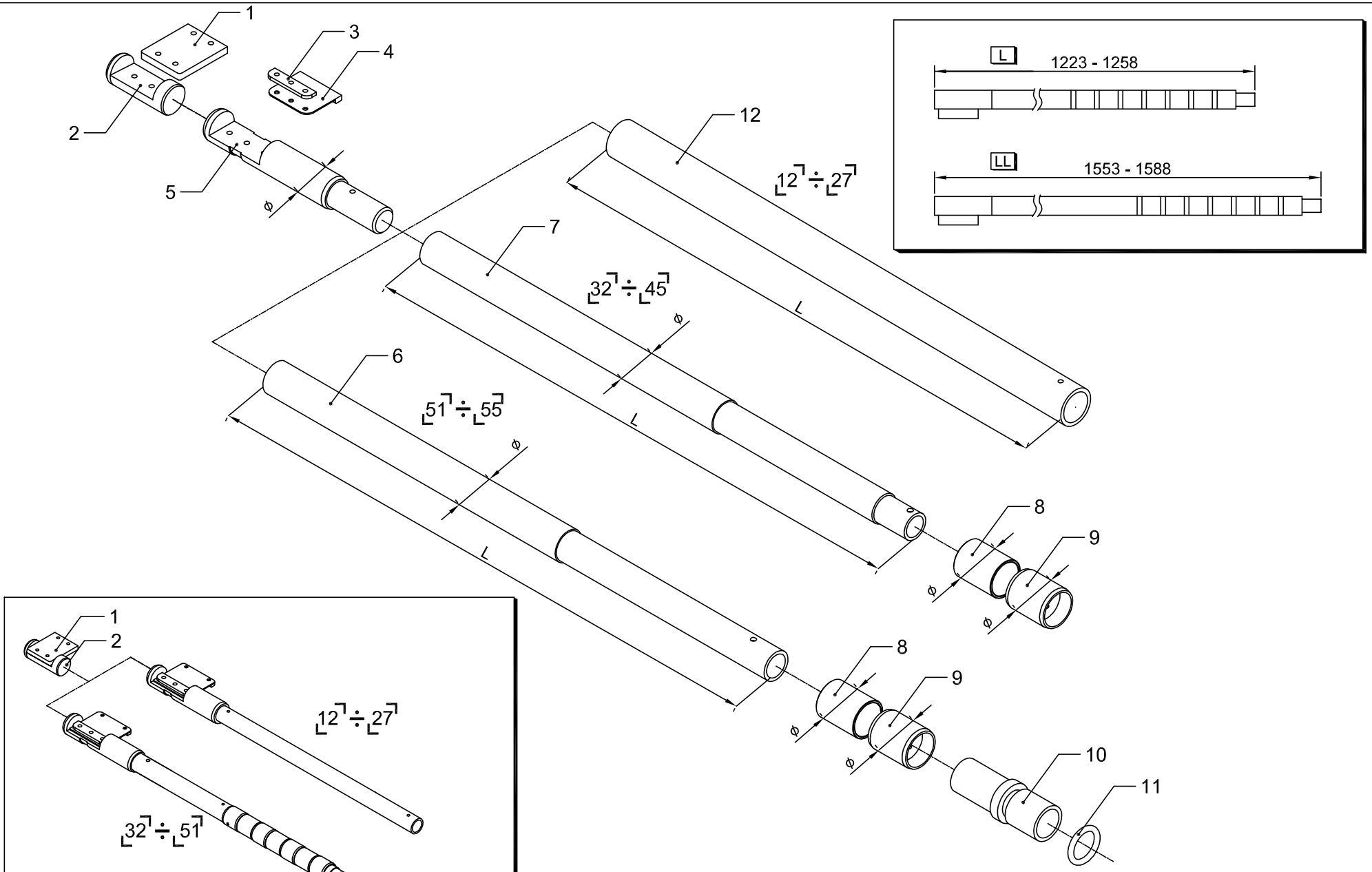
[L] [LL] BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG,LL=EXTRA LONG)

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



N.	Code	QTY	Denomination
1	AV27PB0900	1	Pusher
2	IE_0712000	1	Rotating unit
	IE_0816000	1	Rotating unit
	L : Left thread R : Right thread		
2	IE_10__000	1	Rotating unit
	NOMINAL DIAMETER D. → 20 25 27 L : Left thread R : Right thread		
3	IE_25__000	1	Rotating unit
	NOMINAL DIAMETER D. → 32 34 35 37 38 42 45 51 L : Left thread R : Right thread ϕA 33 34.5 36 38 39 43 46 52		
4	IE_25520__	1	Collet connection
	10 → M25*1.5-M10*1 17 → M25*1.5-M17*1 25 → M25*1.5-M25*1.5 L : Left thread R : Right thread		
5	IEN0712001	1	Safety washer S7 12 Rotating unit
5	IEN0813001	1	Safety washer S8 16 Rotating unit
5	IEN1016001	1	Safety washer S10 20.23.25.27 Rotating unit M25-M10 Collet connection
5	IEN1724001	1	Safety washer S16 M25-M17 Collet connection
5	IEN2636001	1	Safety washer S24 M25-M25 Collet connection
6	IE_2552020	1	Grease nipple M25-ϕ20
	L : Left thread R : Right thread		
7	IE_1020___	1	Bar collet
	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 .



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

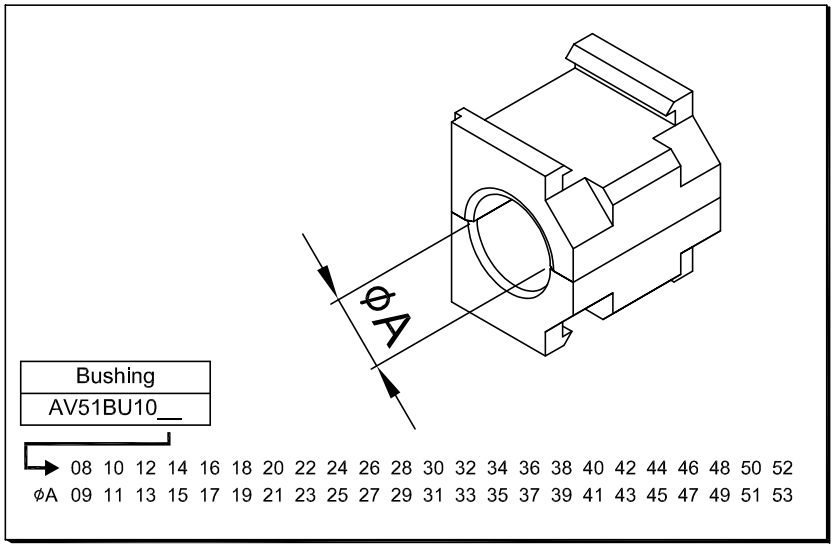
⌐12¬ ÷ ⌐51¬ RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT .

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 55 ø 11.6 16 20 25 27 32.5 35.5 38.5 42.5 45.5 51.5 55		
3	AV16PB0300	1	Anchor 10 - 16
	AV20PB0300	1	Anchor 18 / 19 / 20
	AV51PB0300	1	Anchor 25 - 51
4	AV20PB0210	1	Flag 12 / 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 55 ø 12 16 20 25 27 32 35 38 42 45 51 55		
L	AV51PB0420	1	Bar pusher ø50.8 L=997 51.55 TYPE
LL	AV51PB0520		Bar pusher ø50.8 L=1327 51.55 TYPE
L	AV__PB0420	1	Bar pusher L=1061
LL	AV__PB0520	1	Bar pusher L=1391
	NOMINAL DIAMETER D. → 32 35 38 42 45 ø 30 34 38 40 44		
8	AV__PB0700	3	Spacer
	NOMINAL DIAMETER D. → 32 35 38 42 45 51 ø 31.5 34 37 40 43 49		
9	AV__PB0800	4	Bronze ring
	NOMINAL DIAMETER D. → 32 34 35 38 42 45 51 55 ø 32 34 34.5 38 41.5 44.3 51 55		
10	AV51PB1100	1	Connector rod
11	AV51PB1200	1	Piston

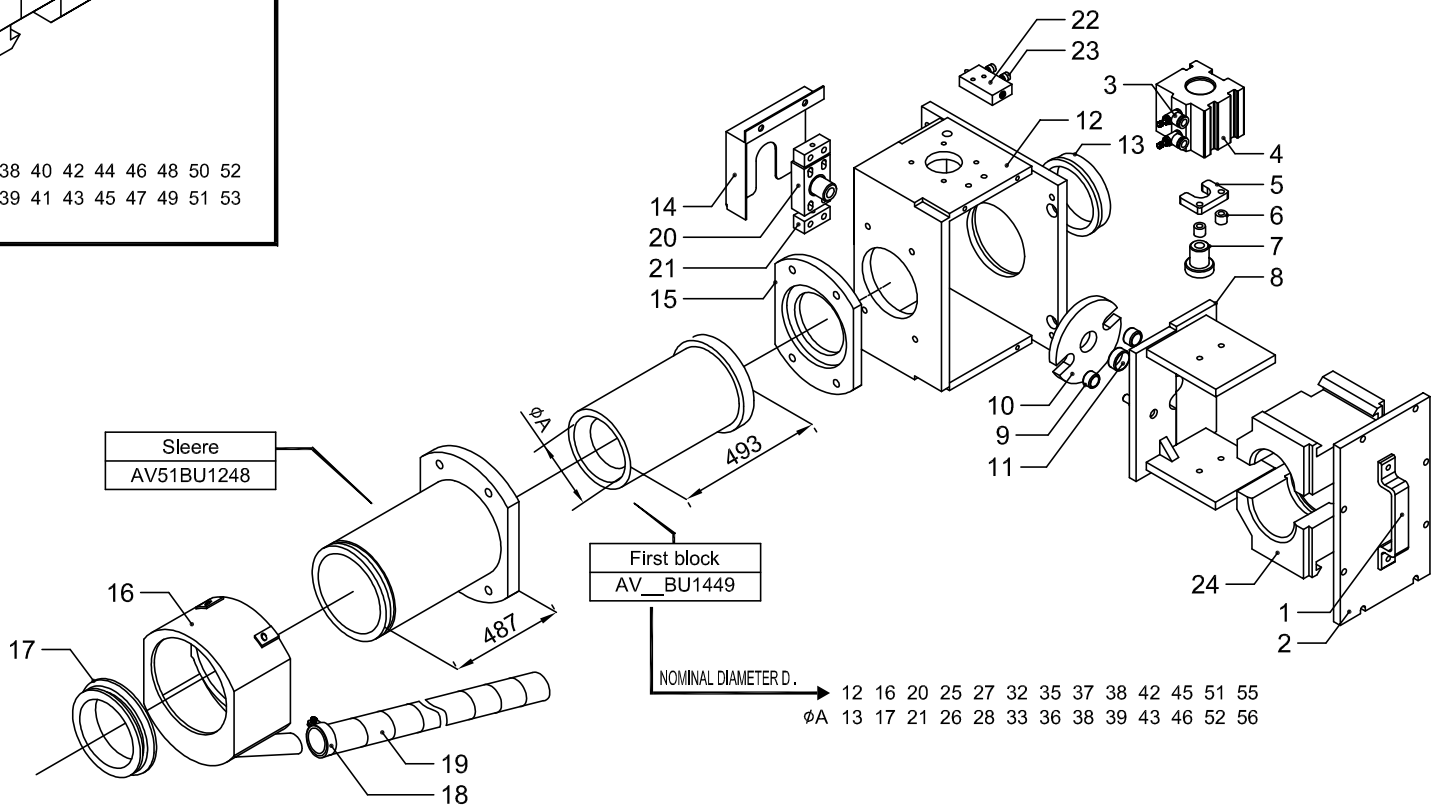
N.	Code	QTY	Denomination
L	AV__PB0420	1	Bar pusher
12			
LL	AV__PB0520	1	Bar pusher
	NOMINAL DIAMETER D. → 12 16 20 25 27 ø 11 15 19 24 25		
13	AV__PB0020-__R	1	Bar pusher device
	TYPE. → L [L] LL [LL] NOMINAL DIAMETER D. → 12 16 20 25 27 32 34 35 38 42 45 51 55 ø 10 14 18 23 24 32 34 34.5 38 41.5 44.3 51 55		

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

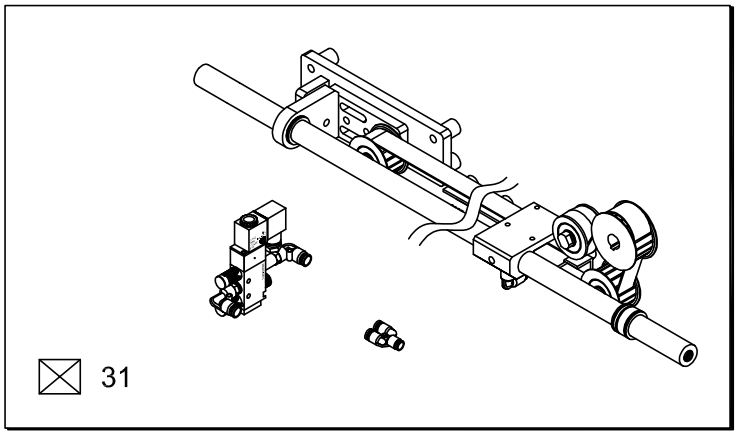
⌜12⌝÷⌜51⌝ RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT .

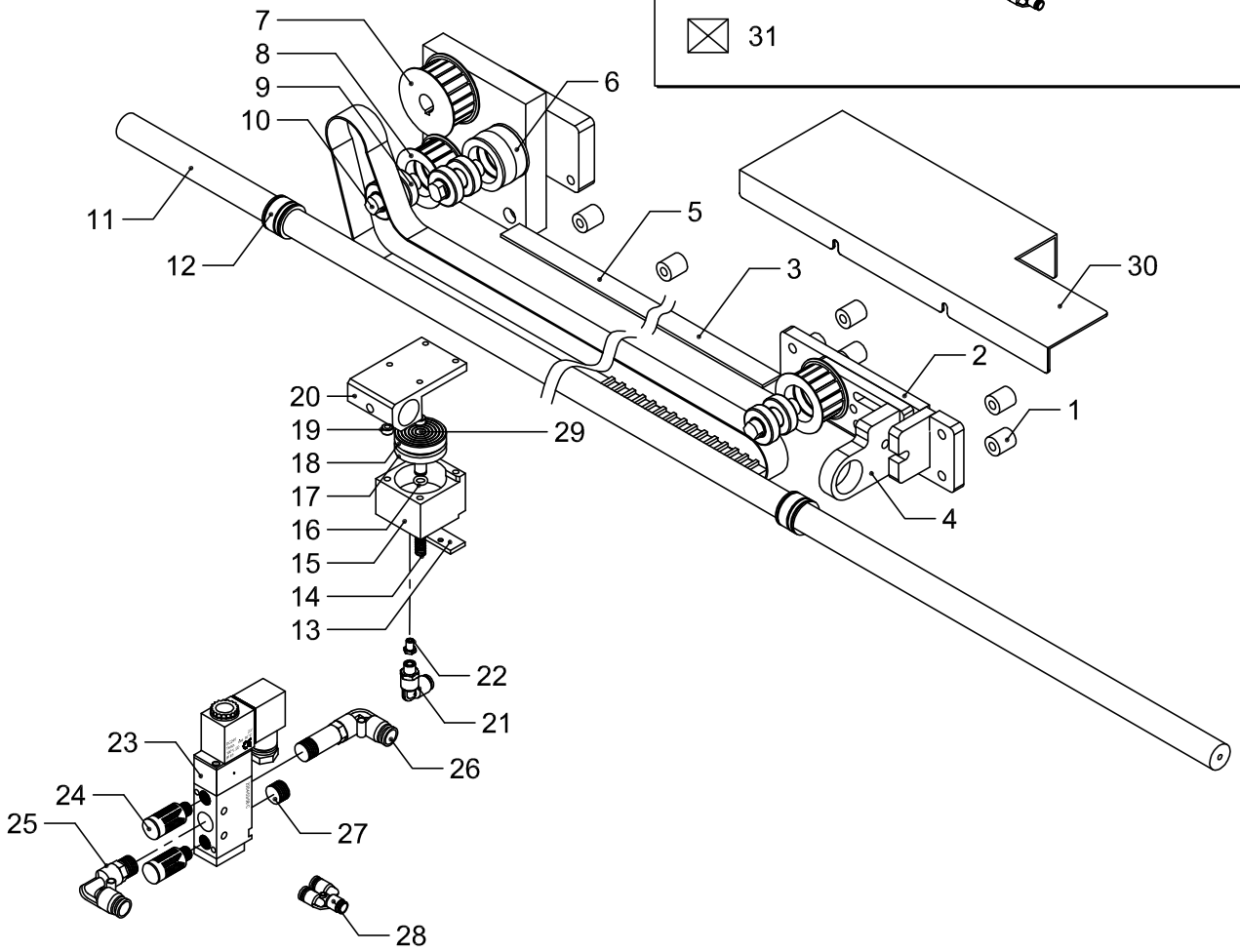


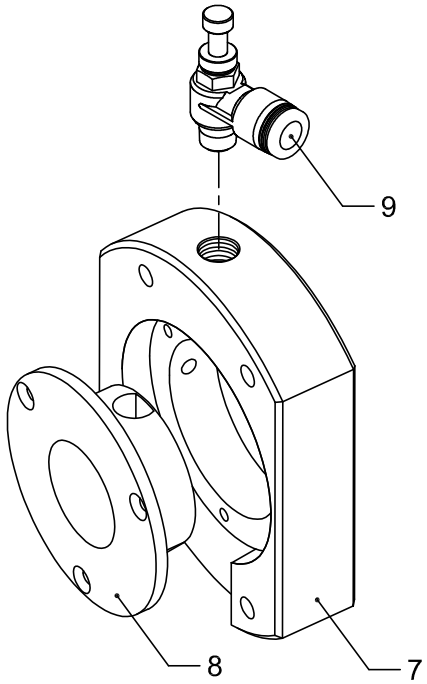
N.	Code	QTY	Denomination
1	AV51BU1700	1	Handle
2	AV51BU0400	1	Plate
3	A12130800	2	Connection
4	A11131800	1	Cylinderr SDA 50x30
5	AV51BU0900	1	Support
6	AV51BU1600	2	Bushing
7	AV51BU0810	1	Ring
8	AV51BU0300	2	Slide
9	BIRT1220	2	Bearing
10	AV51BU0100	1	Support
11	BCB852010	1	Bearing
12	AV51BU0210	1	Case
13	AV51BU0500	1	Ring
14	AV51BU0700	1	Cover
15	AV51BU1100	1	Flange
16	AV51BU1300	1	Oil recovery
17	AV51BU1500	1	Seal
18	A16120100	1	1 3/4" Cable tie
19	AV51BU2000	1	Hyclraulic hose
20	AV51BU1800	1	Oil hose holder
21	AV51BU1900	2	Adjuster
22	A12120800	1	Valve
23	A13110800	2	Straight Connector SPC 8-01

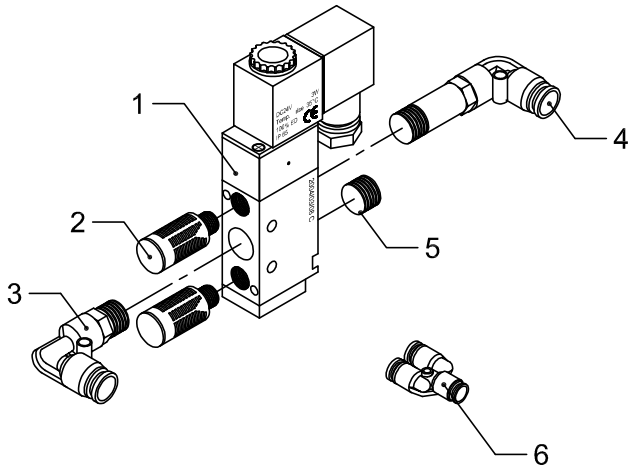


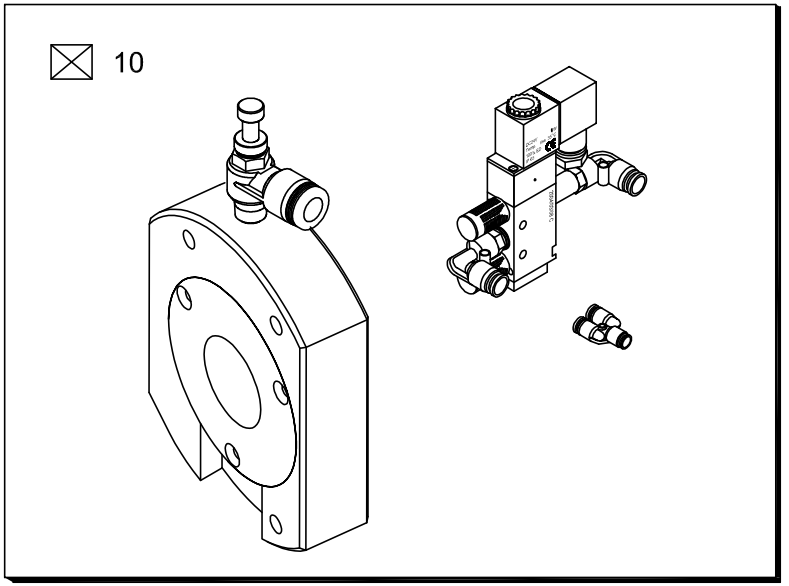
N.	Code	QTY	Denomination
1	AV51SY1000	7	Bushing
2	AV51SY0610	1	Plate
3	AV51SY1400	1	Profile
4	AV51SY0510	1	Support
5	AV51SY1800	1	Toothed belt
6	AV51SY0100	1	Roller
7	AV51SY0300	1	Pulley 19T
8	AV51SY0400	2	Pulley 16T
9	B6003ZZ	6	Bearing
10	AV51SY0200	3	Pin
11	AV51SY0901	1	Shaft
12	AV51SY0800	1	Bronze 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" x 1/8"
23	A12120100	1	Electro valve
24	A14110200	2	Silencer
25	A13120100	1	Bended connector SPL 6-02
26	A13120400	1	Bended connector SPLL 6-02
27	A14120100	1	Bung
28	A13130200	1	Three port Y type
29	AV51SY1503	1	Guide
30	AV51SY3500	1	Belt cover
31	AV51SY0010	1	Sychronization device







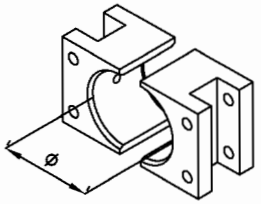


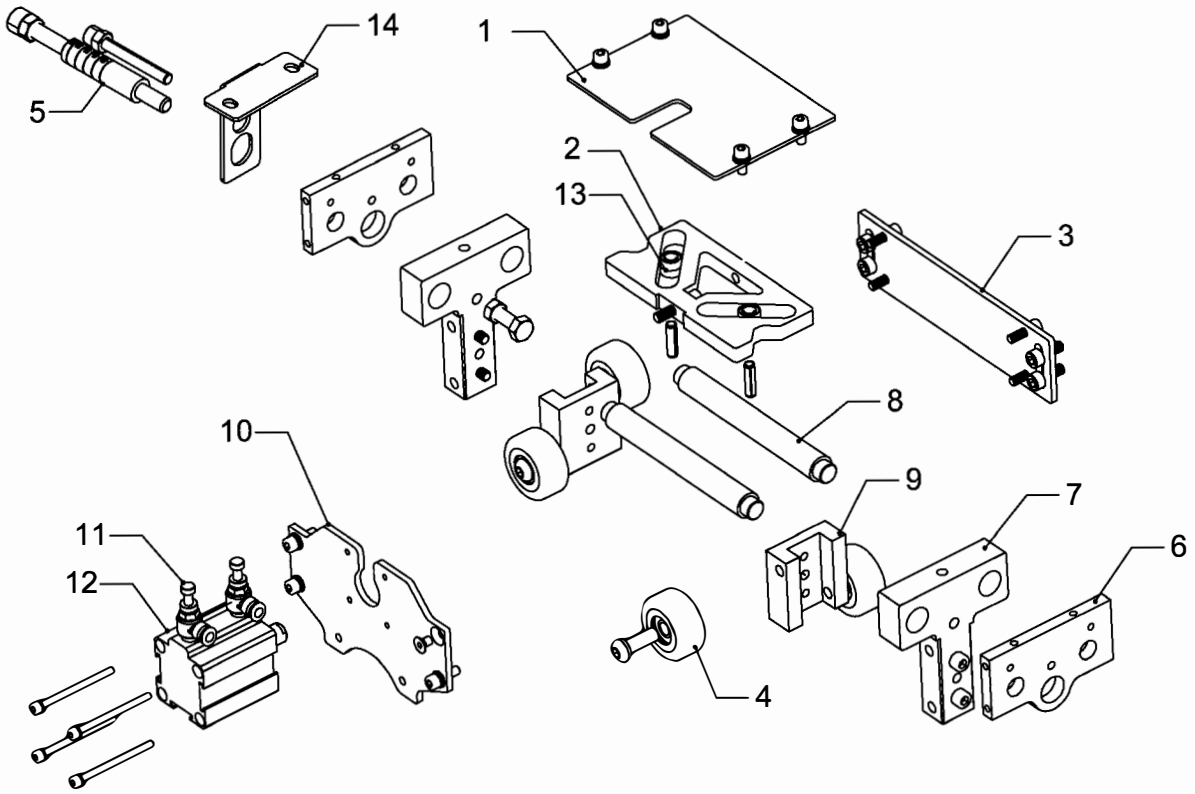


N.	Code	QTY	Denomination
1	A12120100	1	Solenoid valve
2	A14110200	2	Silencer
3	A13120100	2	Bended connector SPL 6-02
4	A13120400	1	Bended connector SPLL 6-02
5	A14120100	1	Bung
6	A13130200	1	Three port Y type
7	AV51TE1001	1	Housing
8	AV51TE1101	1	Flange
9	A12130901	1	Air Control valve JSC8 1/4",ø8
10	AV51RE0001	1	Oil Recovery

Bushing Block
AV51MO08__

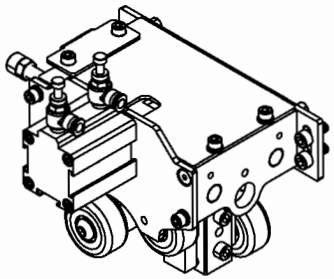
8 20 30 32 34 36 40 50 52
ϕ 9 21 31 33 35 37 41 51 53

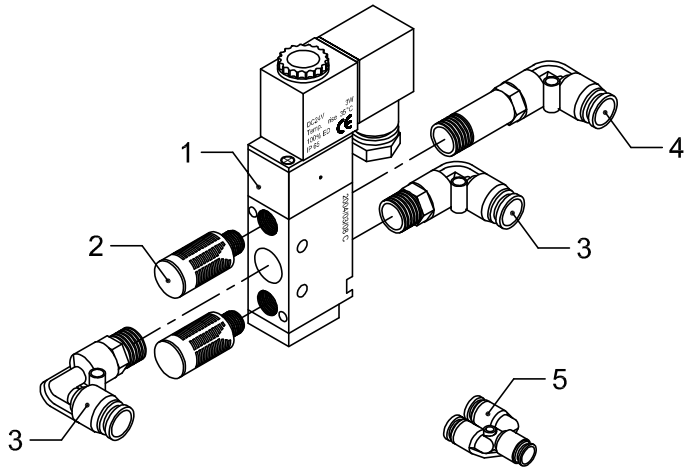


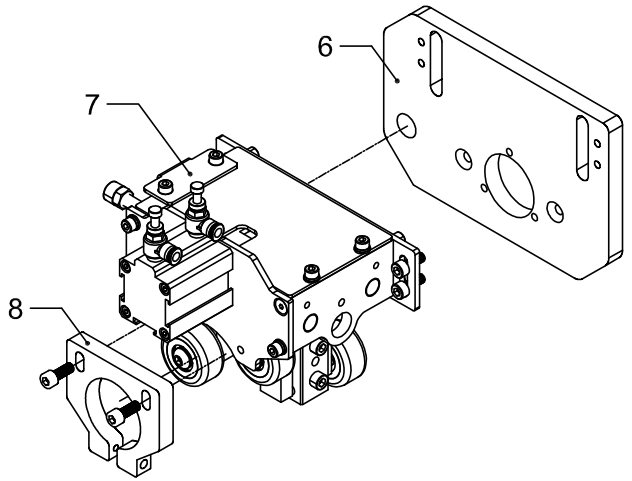


N.	Code	QTY	Denomination
1	AV51MO1000	1	Plate
2	AV51MO0100	1	Cam
3	AV51MO0500	1	Plate
4	HP8127000F	4	Roller
5	AV51MO2200	1	Tube
6	AV51MO0300	2	Plate
7	AV51MO0200	2	Arm
8	AV51MO0700	2	Bar
9	AV51MO1100	2	Bracket
10	AV51MO0600	1	Plate
11	A12130100	2	Flow throttle
12	A11131100	1	Cylinder SDA32x30
13	B686ZZ	4	Bearing
14	AV51MO2300	1	Plate
15	AV51MO002A	1	Anti-vibration device

☒ 15

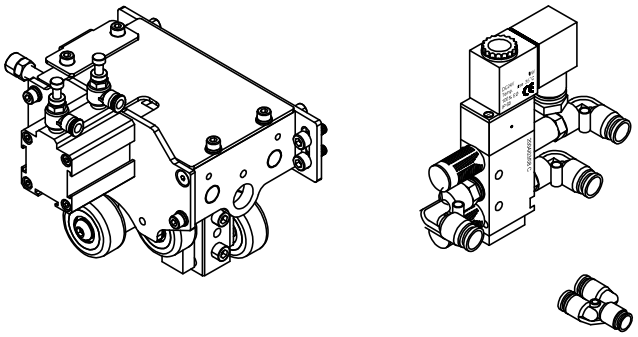


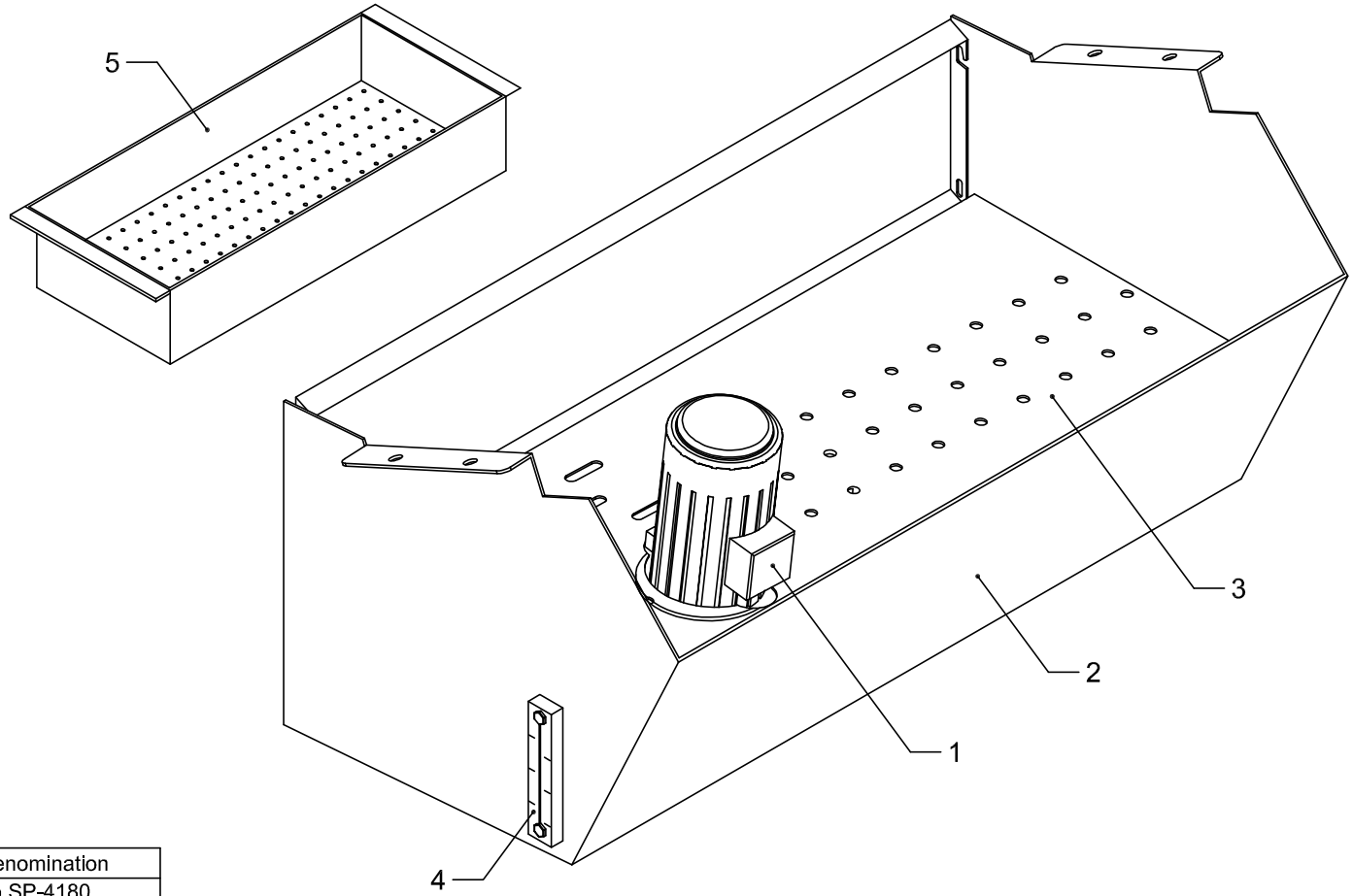




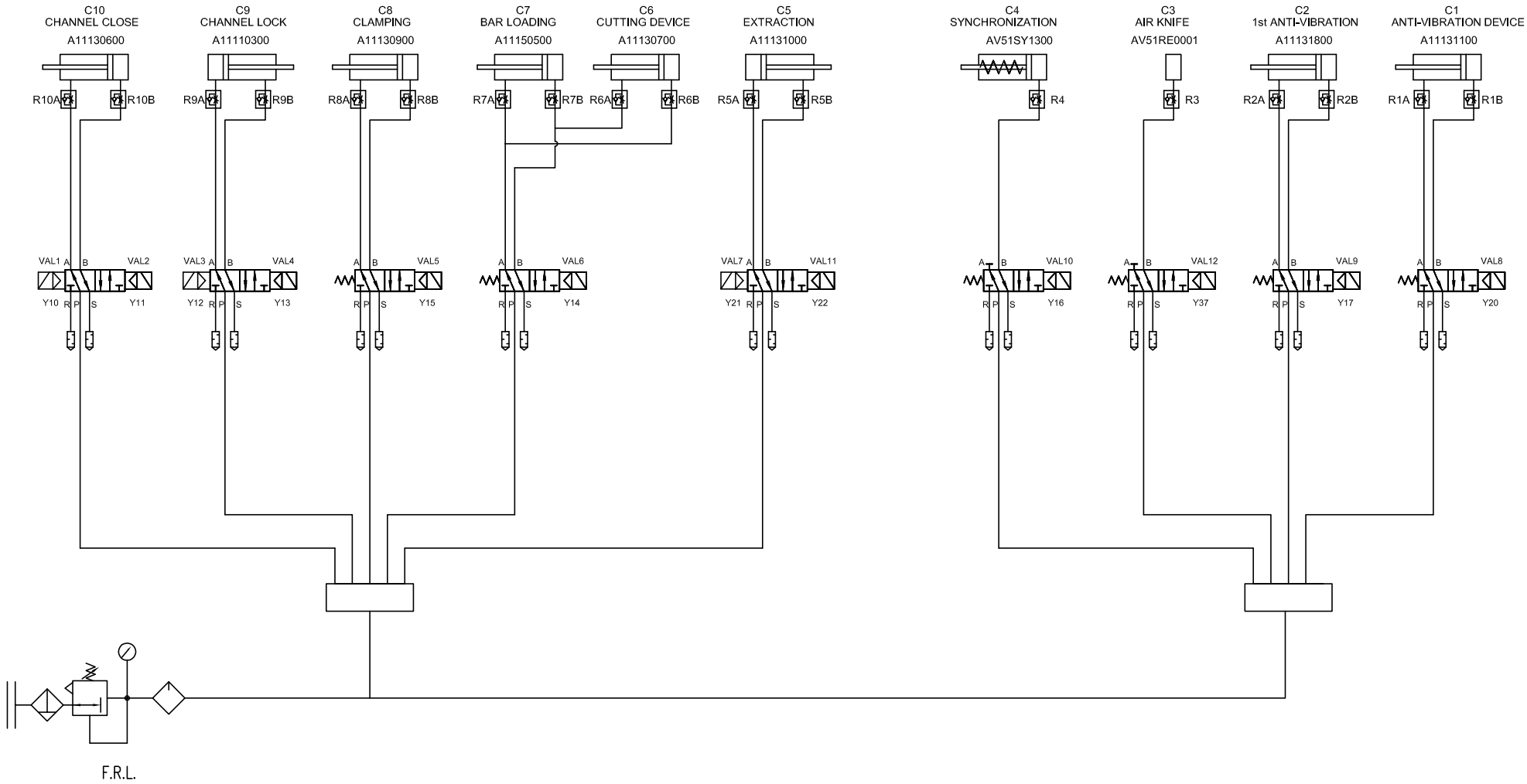
N.	Code	QTY	Denomination
1	A12120100	1	Electro valve
2	A14110200	2	Silencer
3	A13120100	2	Bended connector SPL 6-02
4	A13120400	1	Bended connector SPLL 6-02
5	A13130200	1	Three port Y type
6	AV51MO1300	1	Plate
7	AV51MO000A	1	Anti-vibraion device
8	AV37TE0700	1	Clamp
9	AV51MO1002	1	Movable anti-vibration + Solenoid valve

☒ 9





N.	Code	QTY	Denomination
1	AV51OL0900	1	Pump SP-4180
2	AV51OL0100	1	Oil tank
3	AV51OL0220	1	Cover
4	A16110100	1	Oil meter
5	AV51OL0400	1	Remnan tank

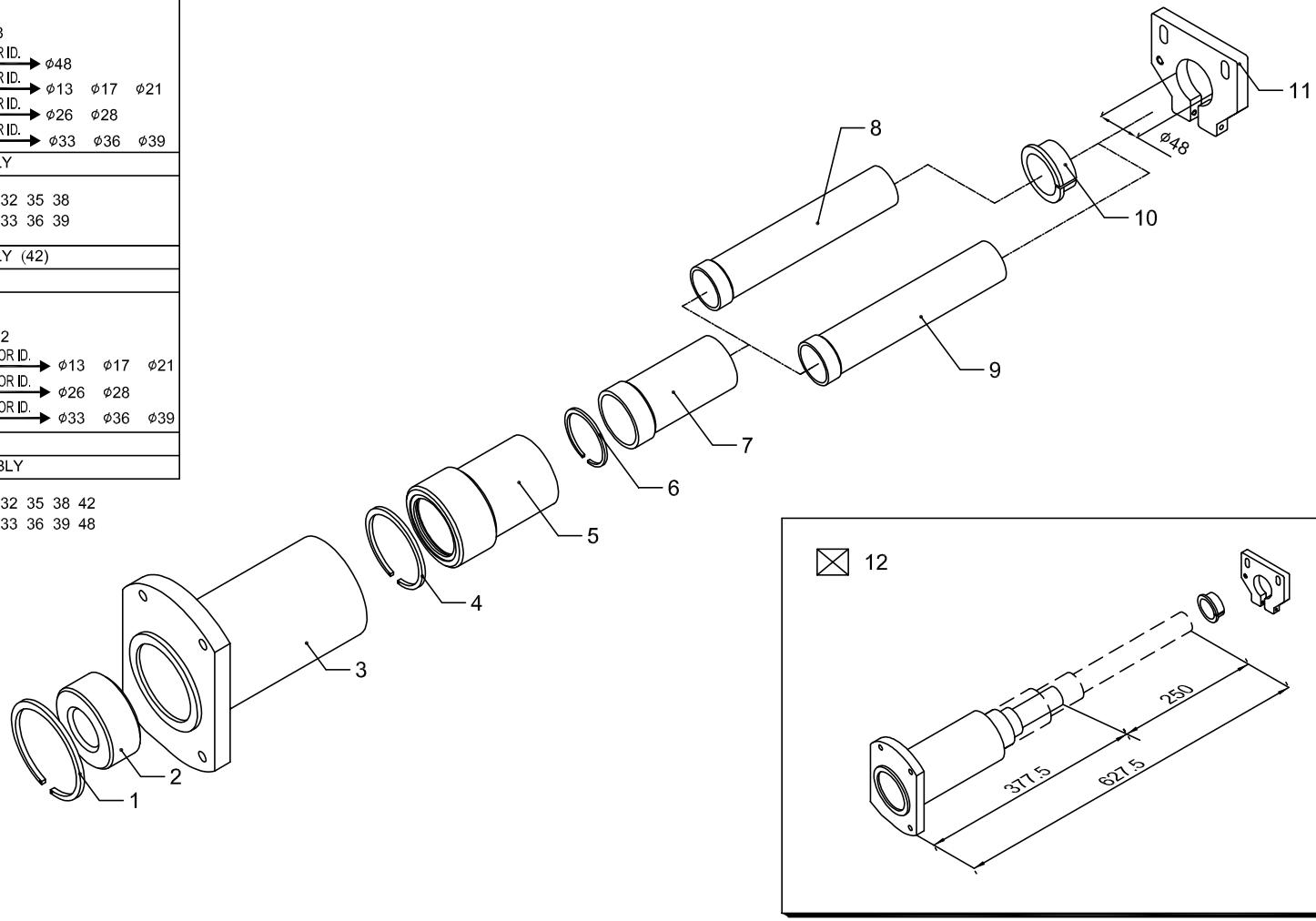


PATRIOT-SX

PRESSURE DIAGRAM

Tab. 140 1

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 ID. → ø48 FOR ID. → ø13 ø17 ø21 FOR ID. → ø26 ø28 FOR ID. → ø33 ø36 ø39		
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)
10	MEP2061__	1	Ring (12~38)
	NOMINAL DIAMETER D. → 40 41 42 ø40 ø30 ø22 FOR ID. → ø13 ø17 ø21 FOR ID. → ø26 ø28 FOR ID. → ø33 ø36 ø39		
11	AV38TE0700	1	Plate
12	MEK206110__	1	400MM TELE NOSE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 ø 13 17 21 26 28 33 36 39 48		

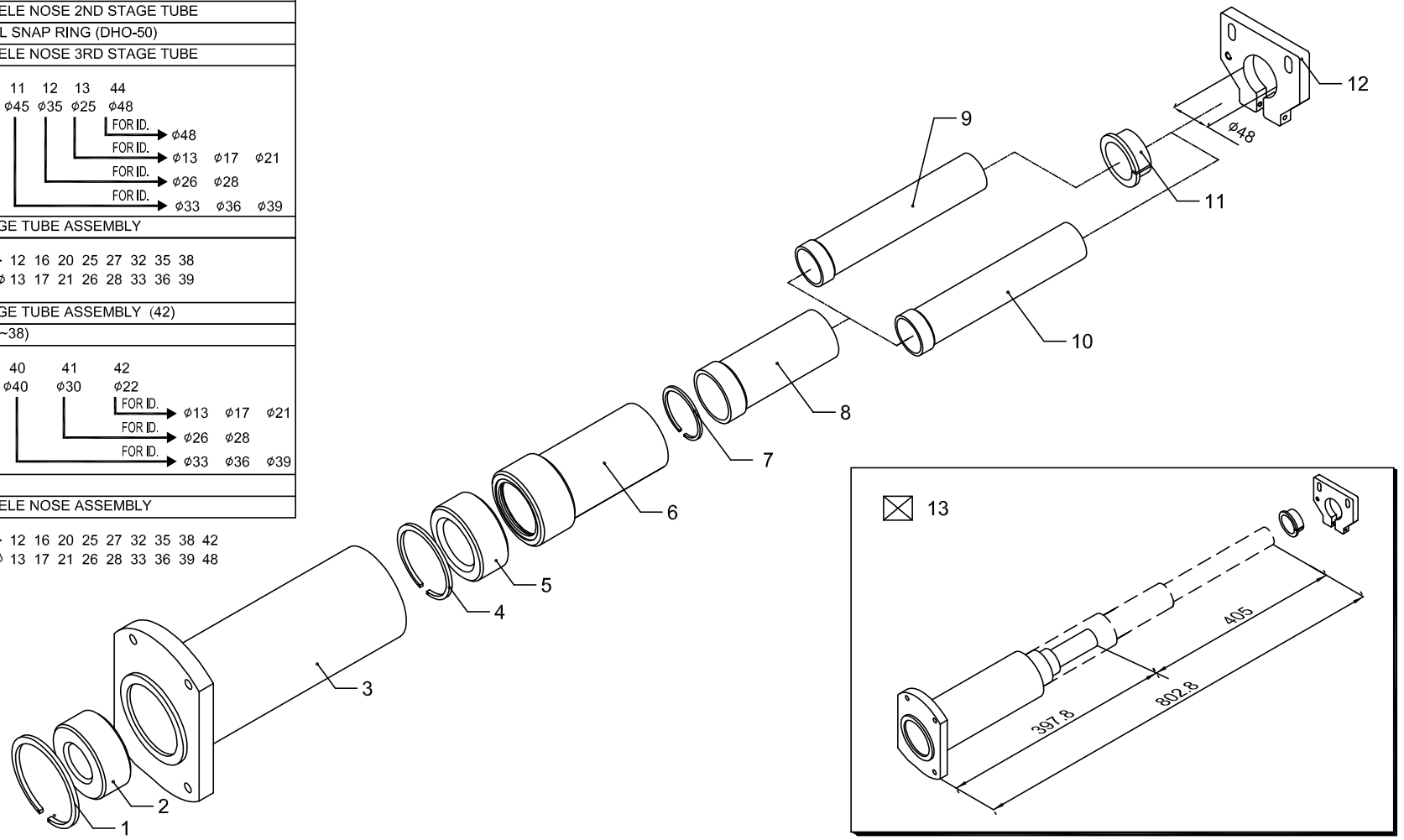


PATRIOT-SX

250MM TELE NOSE ASSEMBLY

Tab. MEK206110__ 9

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		
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
	NOMINAL DIAMETER D. → 31 32 33 34 35 36 38 37 47 ϕ 39 36 33 28 26 21 17 13 43		
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
	NOMINAL DIAMETER D. → 11 12 13 44 ϕ45 ϕ35 ϕ25 ϕ48 FOR ID. → ϕ48 FOR ID. → ϕ13 ϕ17 ϕ21 FOR ID. → ϕ26 ϕ28 FOR ID. → ϕ33 ϕ36 ϕ39		
9	MEK206108__	1	4TH STAGE TUBE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 ϕ 13 17 21 26 28 33 36 39		
10	MEP206145	1	4TH STAGE TUBE ASSEMBLY (42)
11	MEP2061__	1	Ring (12~38)
	NOMINAL DIAMETER D. → 40 41 42 ϕ40 ϕ30 ϕ22 FOR ID. → ϕ13 ϕ17 ϕ21 FOR ID. → ϕ26 ϕ28 FOR ID. → ϕ33 ϕ36 ϕ39		
12	AV38TE0700	1	Plate
13	MEK206111__	1	400MM TELE NOSE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 ϕ 13 17 21 26 28 33 36 39 48		

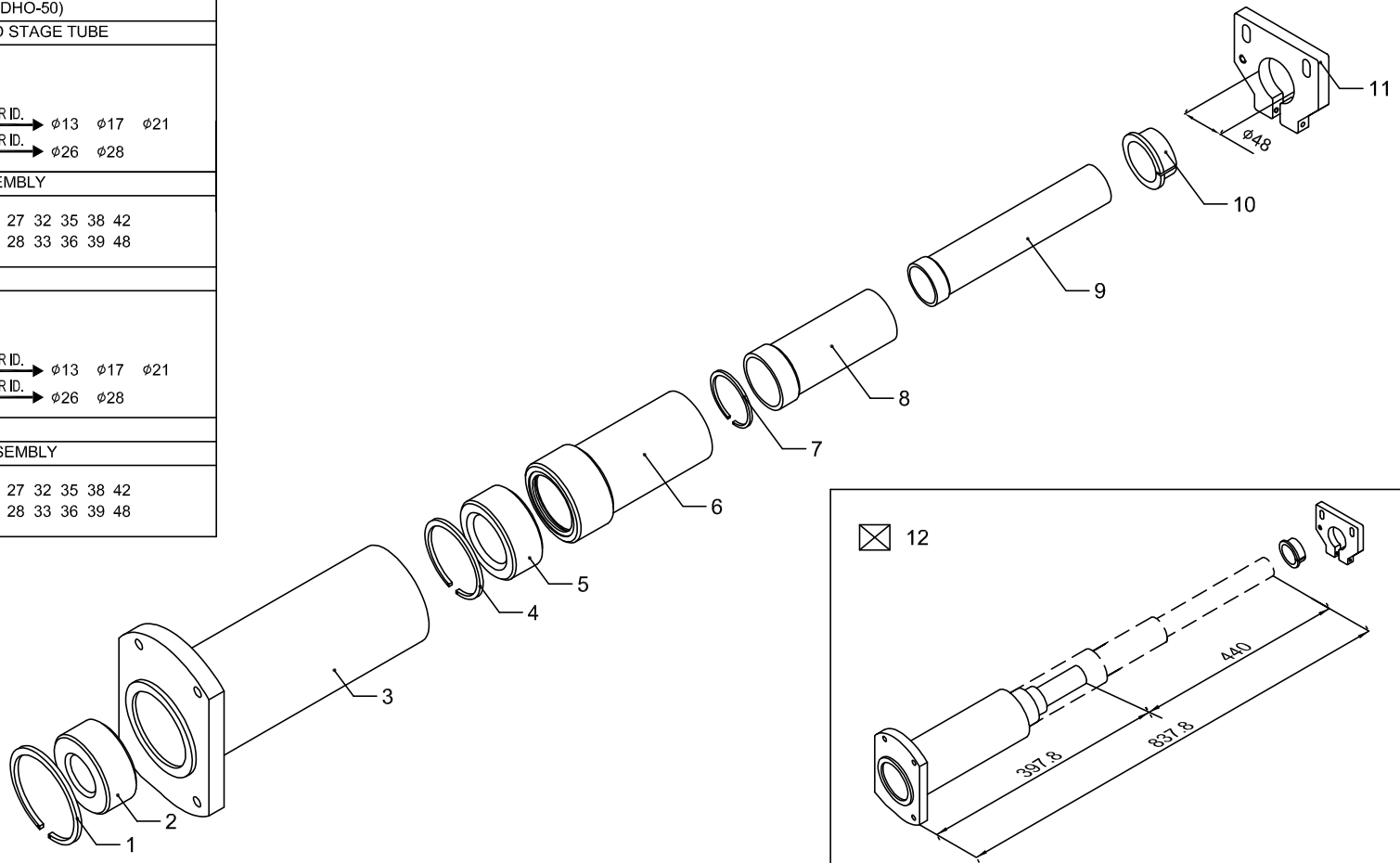


PATRIOT-SX

400MM TELE NOSE ASSEMBLY

Tab. MEK206111__ 9

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. → 27 28 29 39 30 ϕ 28 26 21 17 13		
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. → 34 35 36 38 37 ϕ 28 26 21 17 13		
6	MEK20610510		440MM TELE NOSE 2ND STAGE TUBE
7	DHO-50		INTERNAL SNAP RING (DHO-50)
8	MEK206107__	1	440MM TELE NOSE 3RD STAGE TUBE
	NOMINAL DIAMETER D. → 12 13 ϕ35 ϕ25 FOR ID. → ϕ13 ϕ17 ϕ21 FOR ID. → ϕ26 ϕ28		
9	MEK206108__	1	4TH STAGE TUBE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 ϕ 13 17 21 26 28 33 36 39 48		
10	MEP2061__	1	Ring (12~38)
	NOMINAL DIAMETER D. → 12 13 ϕ35 ϕ25 FOR ID. → ϕ13 ϕ17 ϕ21 FOR ID. → ϕ26 ϕ28		
11	AV38TE0700	1	Plate
12	MEK206112__	1	440MM TELE NOSE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 ϕ 13 17 21 26 28 33 36 39 48		

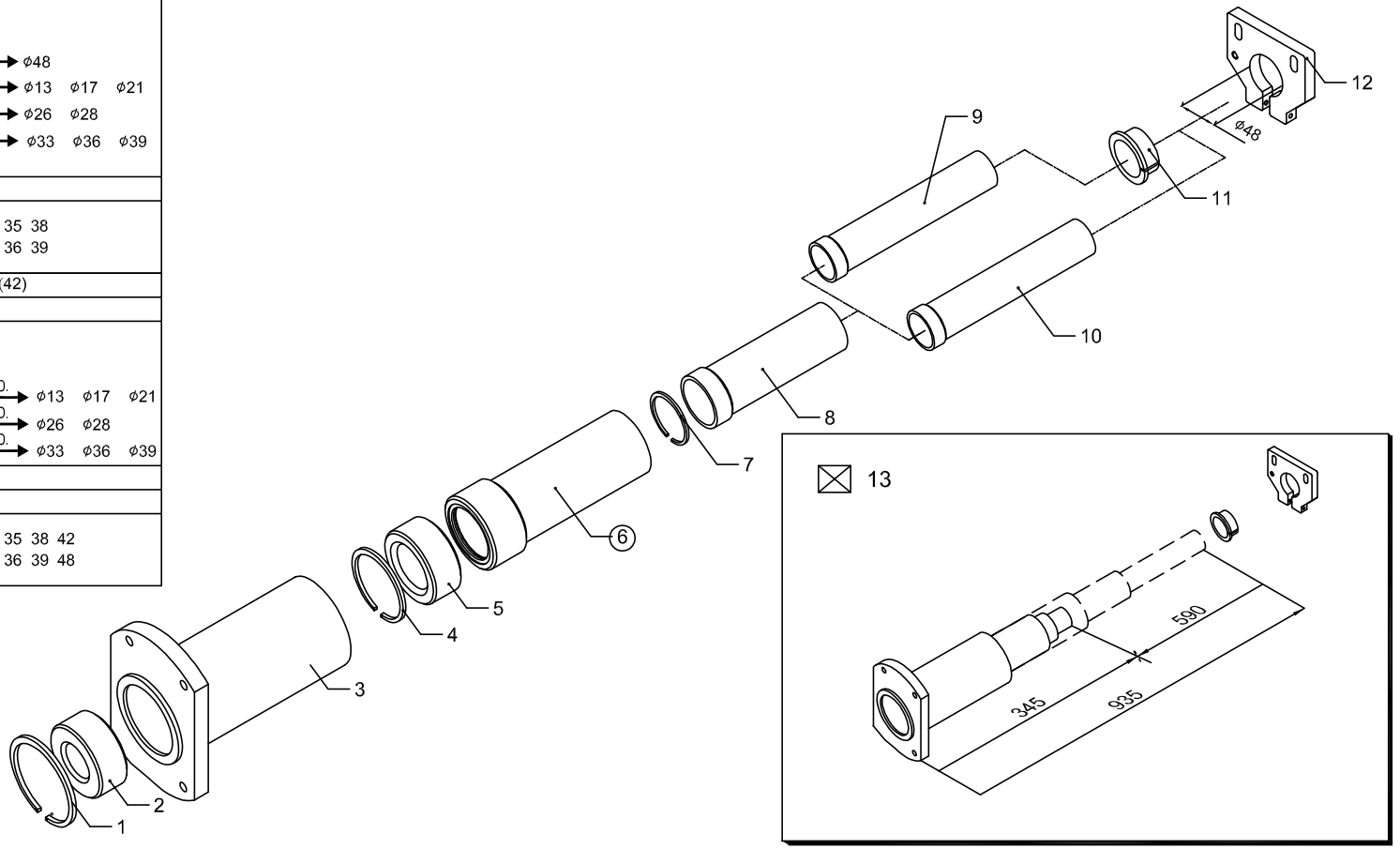


PATRIOT-SX

440MM TELE NOSE ASSEMBLY

Tab. MEK206112__ 4

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	MEK206101	1	590MM 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 ø 39 36 33 28 26 21 17 13 43		
6	MEK206205	1	590MM TELE NOSE 2ND STAGE TUBE
7	DHO-50	1	INTERNAL SNAP RING (DHO-50)
8	MEK206207__	1	590MM TELE NOSE 3RD STAGE TUBE
	NOMINAL DIAMETER D. → 11 12 13 44 ø45 ø35 ø25 ø48 FOR ID. → ø48 FOR ID. → ø13 ø17 ø21 FOR ID. → ø26 ø28 FOR ID. → ø33 ø36 ø39		
9	MEK206208__	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		
10	MEP206145	1	4TH STAGE TUBE ASSEMBLY (42)
11	MEP2061__	1	Ring (12~38)
	NOMINAL DIAMETER D. → 40 41 42 ø40 ø30 ø22 FOR ID. → ø13 ø17 ø21 FOR ID. → ø26 ø28 FOR ID. → ø33 ø36 ø39		
11	AV38TE0700	1	Plate
12	MEK206113__	1	590MM TELE NOSE ASSEMBLY
	NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42 ø 13 17 21 26 28 33 36 39 48		



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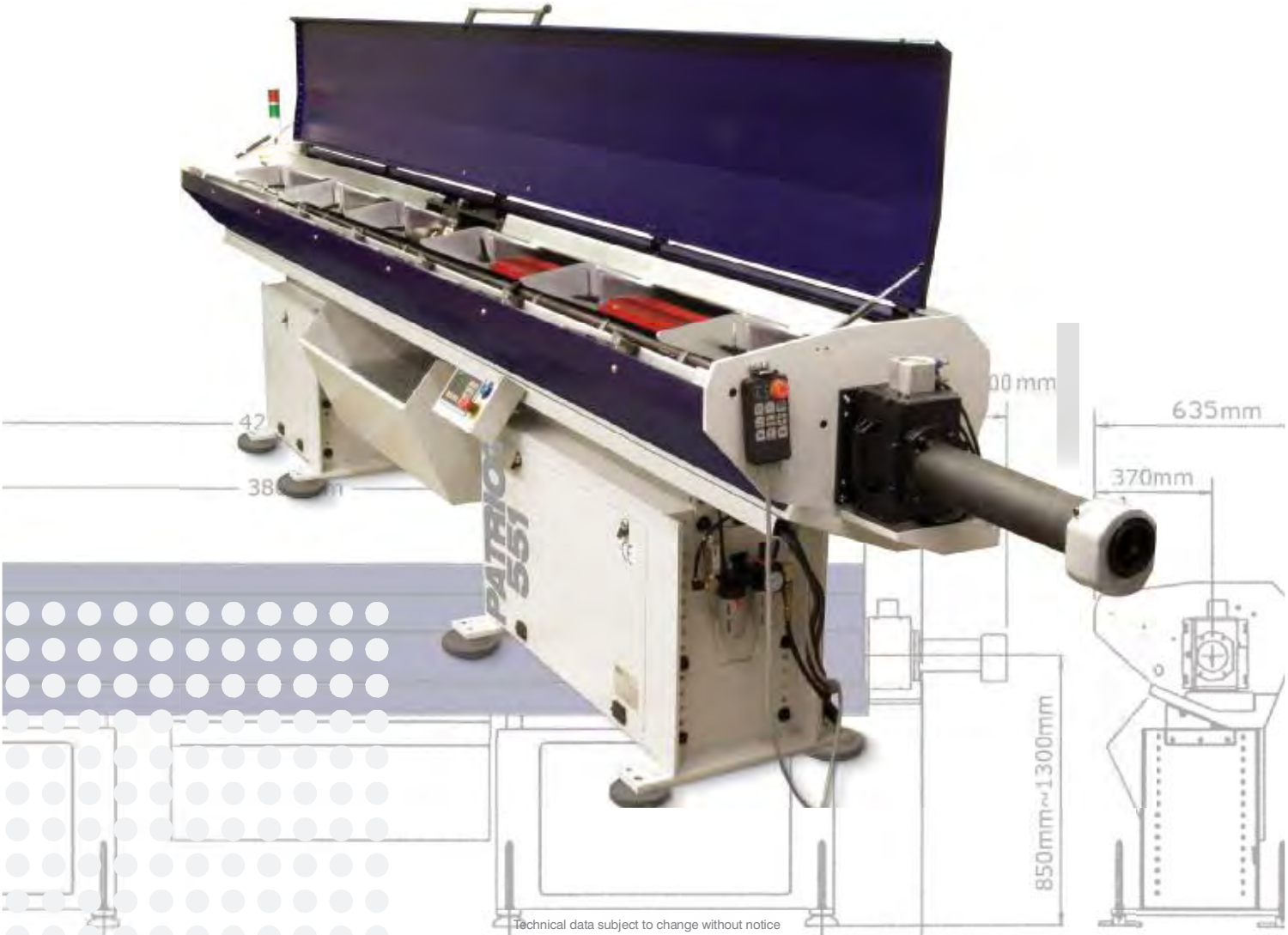
590MM TELE NOSE ASSEMBLY

Tab. MEK206113__ 2

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

Patriot Series 338 & 551

OPERATIONS MANUAL



Technical data subject to change without notice

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