



Minuteman **320** *Operation Manual*



MINUTEMAN 320
HYDRODYNAMIC AUTOMATIC BAR FEEDER
MM-320

MANUAL FOR USE AND MAINTENANCE
REV. 9 DATE : 2012/12/10 COD : BMM09103032

S/H

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1. GENERAL INFORMATION



Please read the Manual carefully before operating bar feeder.

1.1 Contents of manual

The feeder manufacturer provides this manual, which is an essential part of the integrated product. Please act in accordance to the indications of this manual in order to assure operators' safety as well as the machines, to greatly achieve economic efficiency and to get the best results out of the machine. The important parts are printed in boldface, and include the following marks:



Warning:

Hazard! It is possible to be seriously hurt, please be careful.



Watch out-Precautions:

To prevent accident or the loss of property, you should take precautions.



Important information:

Special important know-how information

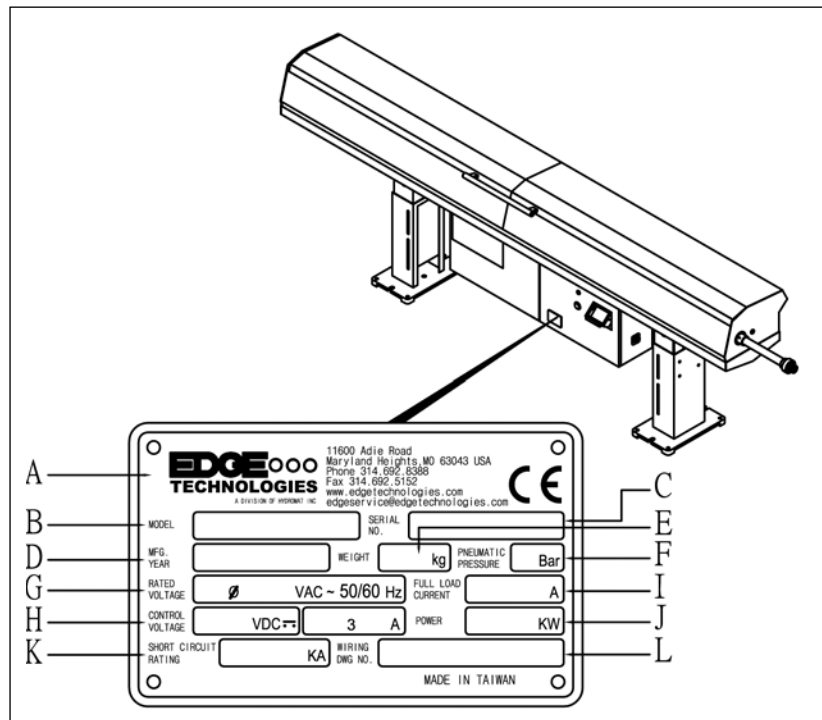
Please refer to the table of contents, you will quickly find the information you need.



The marks shown in this manual means that the machine should be operated by a qualified and experienced operator.

1.2 Name 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



INFORMATION:

When inquiring about service or ordering parts, please reference the serial number (D).

1.3 Technical Support

For technical support, contact the service center in the appendix at anytime or refer to the name plate on the bar feeder.

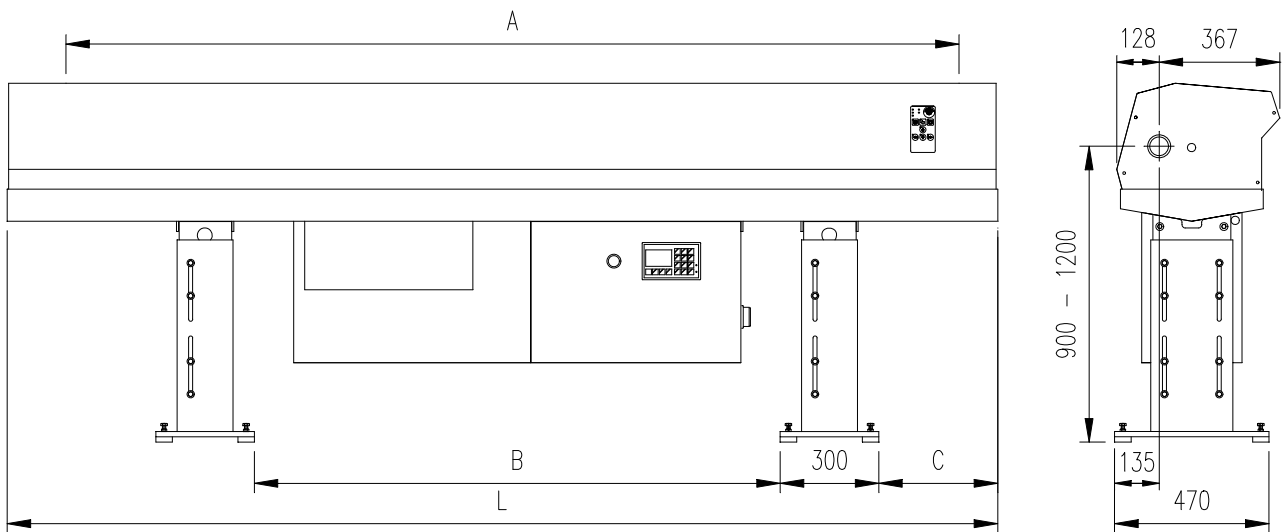
2. TECHNICAL DATA

2.1 Instruction

The Minuteman 320 is an automatic hydrodynamic bar feeder designed for fixed and sliding headstock CNC and CAM lathes, to automatically feed and load material. A PLC controls the bar feeder operations with the lathe using an operator interface to program application settings. Manual and automatic operation are made easy through the remote operators pendant.

The bar feeder can feed round, shaped and many other forms of material. Hydraulic oil is pumped into a completely closed guide channel reducing noise, vibration and temperature during material rotation at high speed. Adjustable roller guides on the front of the barfeed (and headstock for sliding headstock lathes) are further used to reduce noise and vibration by eliminating gaps between the guide channel and material allowing a large range of material diameters to be used in one guide channel.

2.2 Machine foot print



<i>MOD</i>	<i>21</i>	<i>37</i>	<i>44</i>
<i>L</i>	2830mm (111.4")	4370mm (172")	4970mm (195.7")
<i>A</i>	2100mm (82.6")	3800mm (149.6")	4400mm (173.2")
<i>B</i>	1510mm (59.4")	2178mm (85.7")	2478mm (97.5")
<i>C</i>	345mm (13.5")	583mm (23")	881mm (34.7")
<i>Weight</i>	380 kg. (837.7lbs.)	600 kg. (1214.7lbs.)	680 kg. (1376.7lbs.)

2.3 Description of the type

<i>TYPE</i>	<i>MM-320</i>
<i>Diameter of material</i>	3-20 mm (1/8" - 25/32") (.0125 - .7812)
	4-7 mm (3/16" - 11/16") (.1875 - .6875)
<i>Bar Loading Capacity</i>	260mm – 26 10mm round
<i>Air Supply</i>	5-7 kg/cm ² (5-7 bar) (72-101.5psi)
<i>Power Supply</i>	220/380V 0.4A 50/60Hz

2.4 Compressed air supply

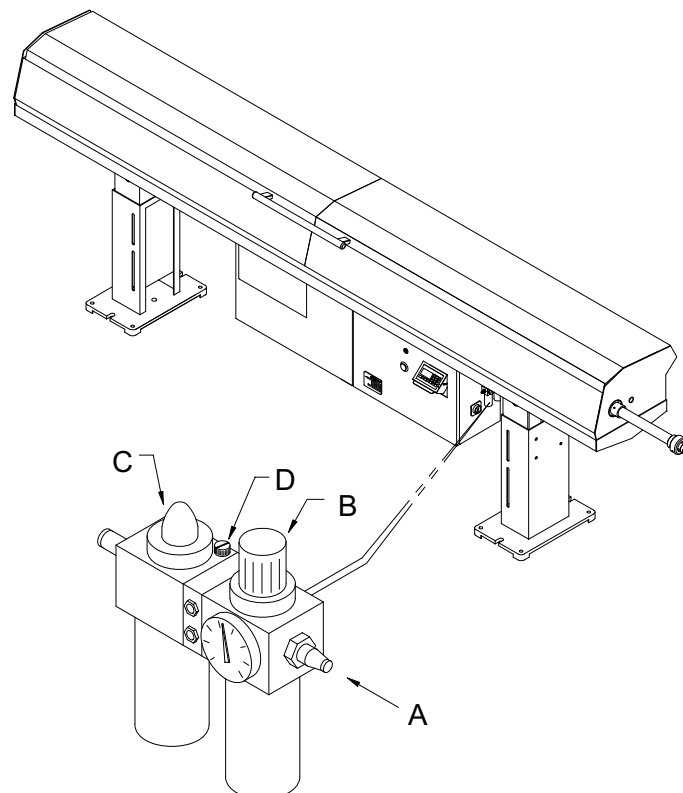
2.4.1 Tube for compressed air supply unit must be bigger than 8mm. Pressure must be over 6 bar or 80 psi, consumption about 50L/H.

2.4.2 Install the air supply into "A". Then pull up and turn the knob "B" to set the pressure at 6 bar or 80 psi.

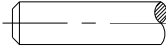
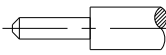
2.4.3 Control air lubrication cylinder , adjust (C), 1-2 drops 1000 L air if necessary.

2.4.4 Lubrication (D), viscosity 32 Cat , temperature 40°, ISO VG type

Lubricant			
BP ENERGOL HLP32	AGIP OSO 32	MOBIL DTE 24	ESSO NUTO H32

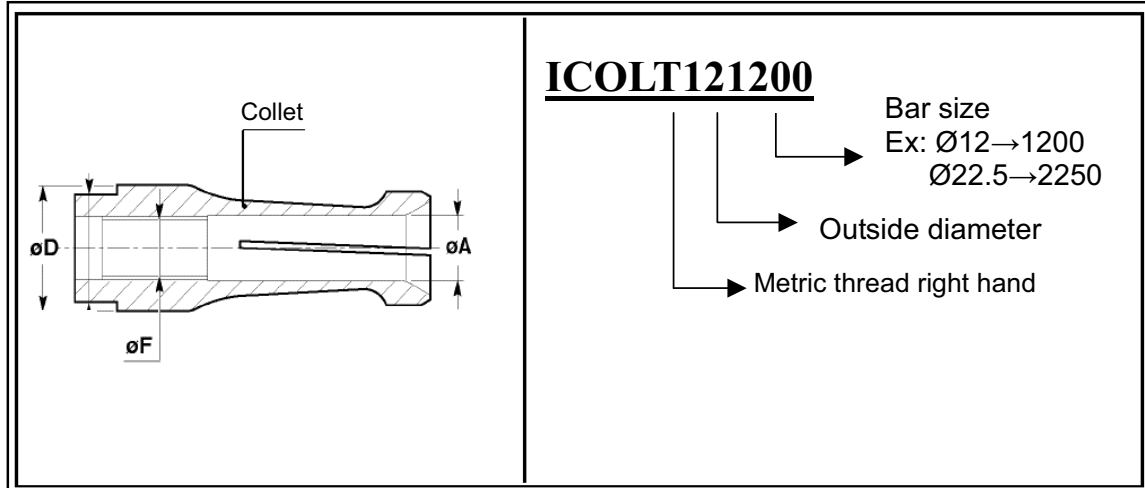


2.5 Guide channel sizes

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

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

2.6 Collet Sizes



$\varnothing A$		$\varnothing F$ M5x.50	$\varnothing F$ M7x0.75	$\varnothing F$ M8x1.0	$\varnothing F$ M8x1.0	$\varnothing F$ M8x1.0	$\varnothing F$ M10x1.0	$\varnothing F$ M10x1.0	$\varnothing F$ M10x1.0
mm	in	7.5mm OD	12mm OD	15mm OD	16mm OD	18mm OD	20mm OD	22mm OD	23mm OD
1.6		ICOLT075160	ICOLT120160	ICOLT150160					
2									
2.4	3/32"	ICOLT075240	ICOLT120240	ICOLT150240					
2.5									
2.8	7/64"	ICOLT075280	ICOLT120280	ICOLT150280					
3									
3.2	1/8"	ICOLT075320	ICOLT120320	ICOLT150320			ICOLT200320		
3.5									
3.6	9/64"	ICOLT075360	ICOLT120360	ICOLT150360			ICOLT200360		
3.8									
4	5/32"	ICOLT075400	ICOLT120400	ICOLT150400			ICOLT200400		
4.4	11/64"	ICOLT075440	ICOLT120440	ICOLT150440			ICOLT200440		
4.5									
4.6									
4.8	3/16"	ICOLT075480	ICOLT120480	ICOLT150480			ICOLT200480		
5									
5.2	13/64"	ICOLT075520	ICOLT120520	ICOLT150520			ICOLT200520		
5.5									
5.6	7/32"	ICOLT075560	ICOLT120560	ICOLT150560			ICOLT200560		
5.7									
5.9									

2. TECHNICAL DATA

MM320

ØA		ØF M5x.50	ØF M7x0.75	ØF M8x1.0	ØF M8x1.0	ØF M8x1.0	ØF M10x1.0	ØF M10x1.0	ØF M10x1.0
mm	in	7.5mm OD	12mm OD	15mm OD	16mm OD	18mm OD	20mm OD	22mm OD	23mm OD
6	15/64"	ICOLT075600	ICOLT120600	ICOLT150600			ICOLT200600		
6.2									
6.4	1/4"	ICOLT075640	ICOLT120640	ICOLT150640			ICOLT200640		
6.5									
6.6									
7			ICOLT120700	ICOLT150700			ICOLT200700		
7.1									
7.2	9/32"		ICOLT120720	ICOLT150720			ICOLT200720		
7.5									
7.6	19/64"								
8	5/16"		ICOLT120800	ICOLT150800			ICOLT200800		
8.3									
8.4	21/64"		ICOLT120840	ICOLT150840			ICOLT200840		
8.5									
8.7									
8.8	11/32"		ICOLT120880	ICOLT150880			ICOLT200880		
8.9									
9									
9.1	23/64"		ICOLT120910	ICOLT150910			ICOLT200910		
9.3									
9.5			ICOLT120950	ICOLT150950			ICOLT200950		
9.6	3/8"		ICOLT120960	ICOLT150960			ICOLT200960		
10	25/64"		ICOLT121000	ICOLT151000			ICOLT201000		
10.25									
10.4	13/32"		ICOLT121040	ICOLT151040			ICOLT201040		
10.5									
10.7									
10.8	27/64"		ICOLT121080	ICOLT151080			ICOLT201080		
11									
11.25	7/16"			ICOLT151120			ICOLT201120		
11.5									
11.7	13/64"								
12				ICOLT151200			ICOLT201200		
12.25									

2. TECHNICAL DATA

MM320

ØA		ØF M5x.50	ØF M7x0.75	ØF M8x1.0	ØF M8x1.0	ØF M8x1.0	ØF M10x1.0	ØF M10x1.0	ØF M10x1.0
mm	in	7.5mm OD	12mm OD	15mm OD	16mm OD	18mm OD	20mm OD	22mm OD	23mm OD
12.5	31/64			ICOLT151250			ICOLT201250		
12.7	1/2			ICOLT151270	ICOLT161270	ICOLT181270	ICOLT201270		
13					ICOLT161300	ICOLT181300	ICOLT201300		
13.5				ICOLT151350	ICOLT161350	ICOLT181350	ICOLT201350		
14					ICOLT161400	ICOLT181400	ICOLT201400		
14.2	9/16				ICOLT161420	ICOLT181420	ICOLT201420		
14.5									
14.7						ICOLT181470	ICOLT201470		
15									
15.2									
15.5						ICOLT181550	ICOLT201550		
15.7						ICOLT181570	ICOLT201570		
16	5/8					ICOLT181600	ICOLT201600	ICOLT221600	ICOLT231600
16.2	41/64								
16.5							ICOLT201650		
16.7									
17							ICOLT201700		
17.2							ICOLT201720		
17.5	11/16						ICOLT201750		
17.7									
18	45/64						ICOLT201800	ICOLT221800	ICOLT231800
18.2							ICOLT201820	ICOLT221820	ICOLT231820
18.5									
18.7							ICOLT201870	ICOLT221870	ICOLT231870
19	3/4							ICOLT221900	ICOLT231900
19.25									
19.5									
19.75									
20								ICOLT222000	ICOLT232000
20.25									
20.5									
20.6								ICOLT222060	ICOLT232060
21								ICOLT222100	ICOLT232100

3. TRANSPORTATION

λ

Hazard-warning:

Transportation and lifting (please refer to the item 3.2.1 of following weight table)

Make sure the crane, forklift or other related tools can take the weight.

Using the proper equipment to move and lift the machine should be undertaken by experienced personnel.

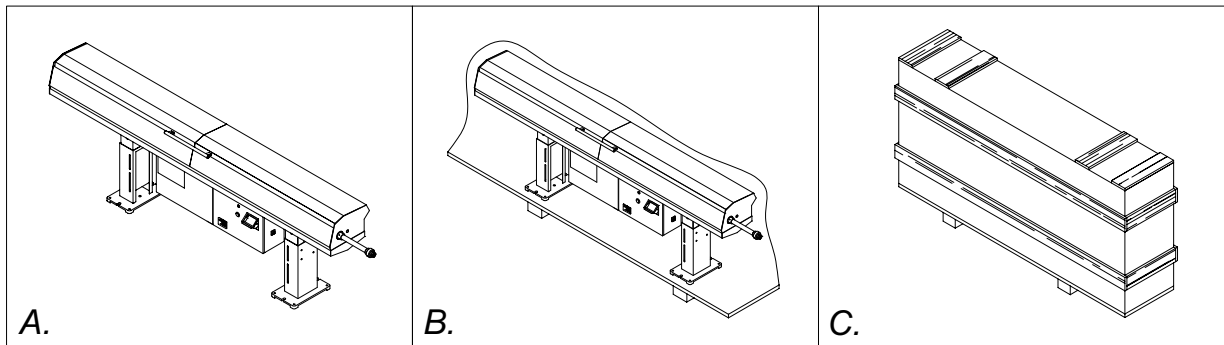
3.1 Packaging

There are three kinds of bar feeder packaging:

A. Unpacked:

B. On the pallet: Put the feeder on the pallet and wrap PE membrane around the feeder.

C. Packing with wooden box: The Feeder was packed with wooden box and wrap PE membrane around the box.

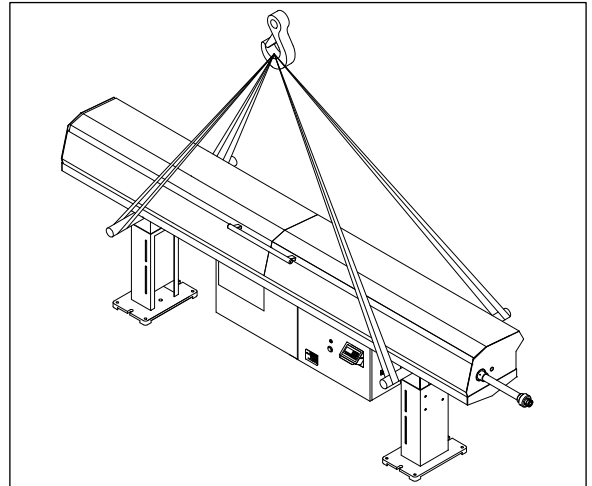


3.2 Transportation and hoist

3.2.1 Unpacking

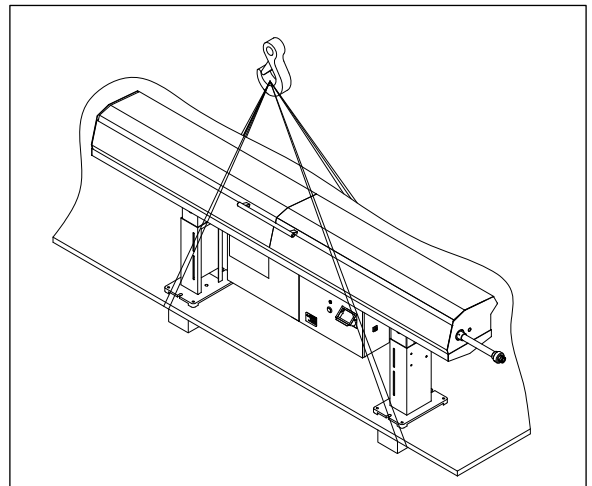
Putting two steel bars (Diameter : 30mm, length: 1M) under the bar feeder, using suitable steel ropes which are able to bear the weight to hoist.

MM-320-21	380 kg. (837.7lbs.)
MM-320-37	600 kg. (1214.7lbs.)
MM-320-44	680 kg. (1376.7lbs.)



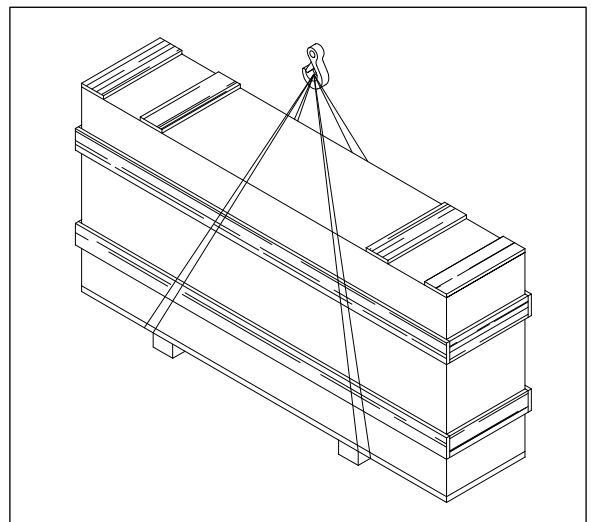
3.2.2 On the pallet

Using suitable steel ropes which is able to bear the weight to hoist the bar feeder.



3.2.3 Packing with wooden box

Using suitable steel ropes which is able to bear the weight to hoist the bar feeder.



3.3 Installation area

In order to fix the feeder securely, the floor must be flat and firm.

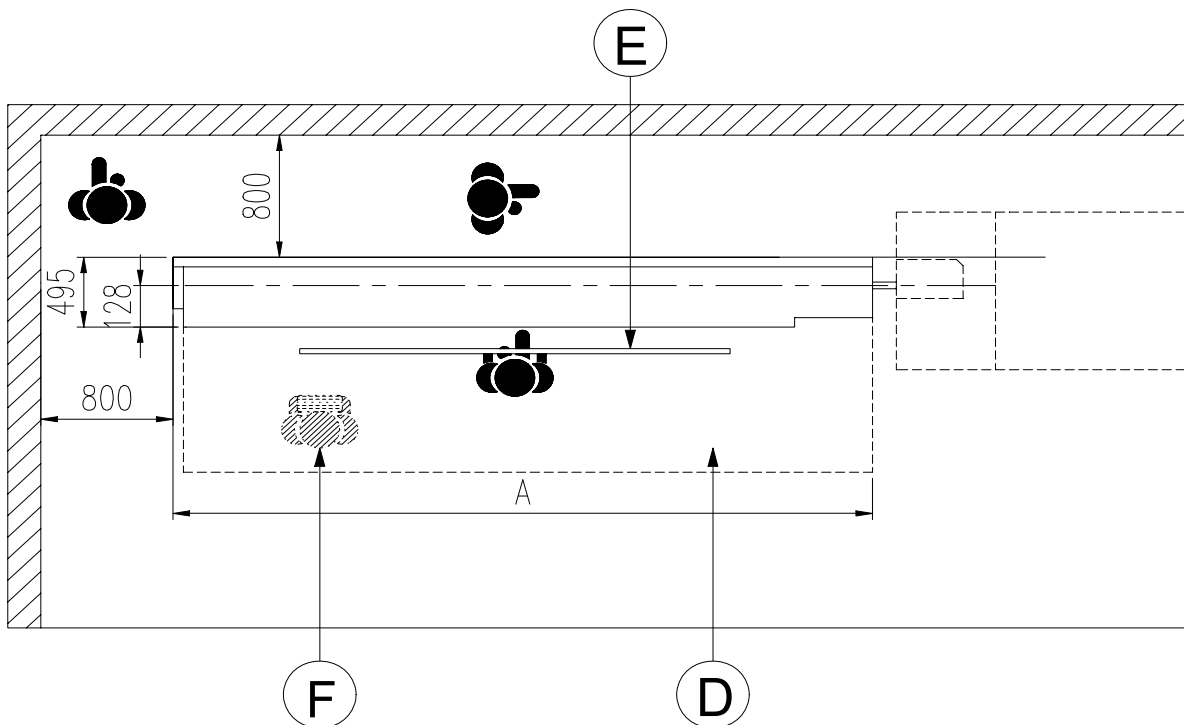
According to the operation of the feeder to reserve a suitable area in advance.

Area : (D-operator area) , (E-supply area) , (F-remnant material area)

The space must be enough to avoid the feeder caused crashed by the operator.

The area of installation needs to have suitable lighting, outlet and compressed air joint.

The feeder can't adapt to explosive surrounding.



List 1.— Size of appearance

Type	Size	A
MM-320	21	2830
	37	4370
	44	4970

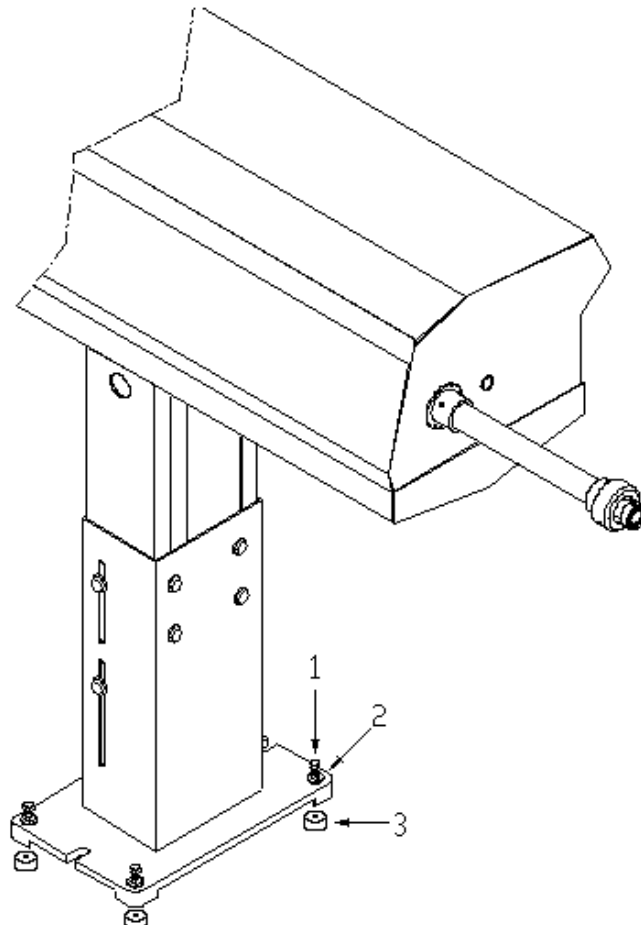
4. INSTALLATION

4.1 Bar feeder - Installation

Before installing the bar feeder, the spindle of the lathe must be level and the lathe anchored to the ground.

4.2 Leveling

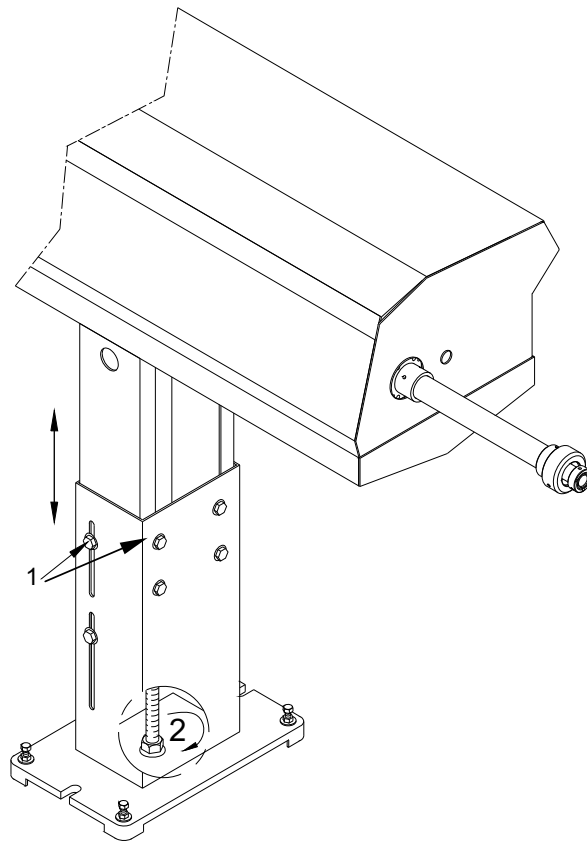
- 4.2.1 Install leveling screws (1) and nuts (2) in both front and back legs
- 4.2.2 Place one leveling pad (3) under each screw
- 4.2.3 Run screw down into leveling pad. Once touching rotate screw two revolutions.
- 4.2.4 Level stands.



4.3 Height adjustment

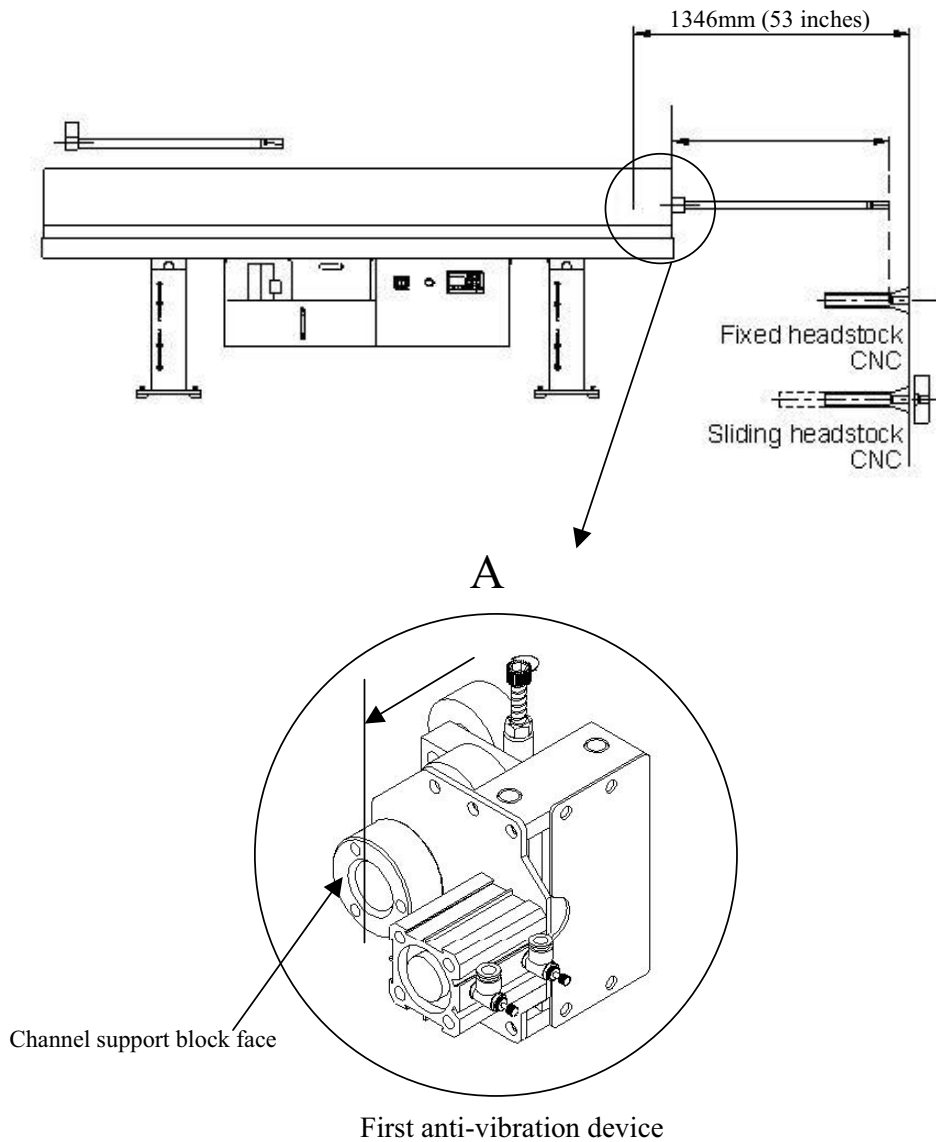
4.3.1 Loosen the screws (1).

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



4.4 Initial position

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

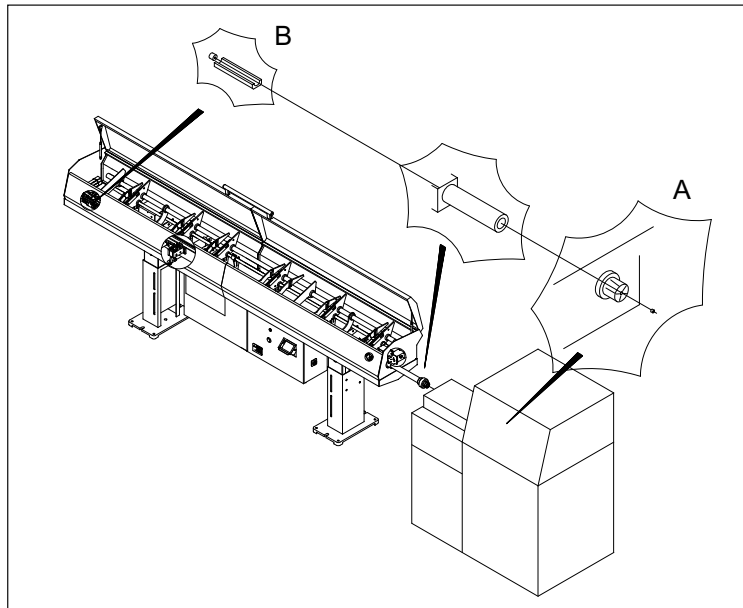


4.5 Adjustment of center

In order to achieve a correct alignment, prepare a nylon string 1.27mm.(.050").

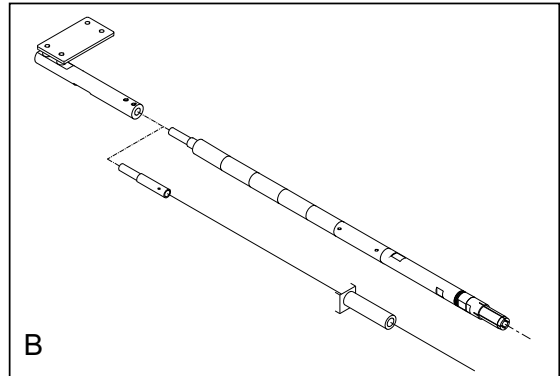
Pull the nylon string from the lathe (A) to the end of the bar feeder (B).

See 4.5.1



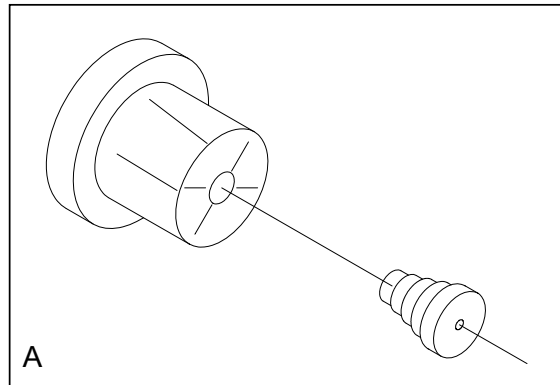
4.5.1

Take push bar out and insert centering plug (comes with bar feeder), pull the nylon string from the lathe A, to the end of the bar feeder B.

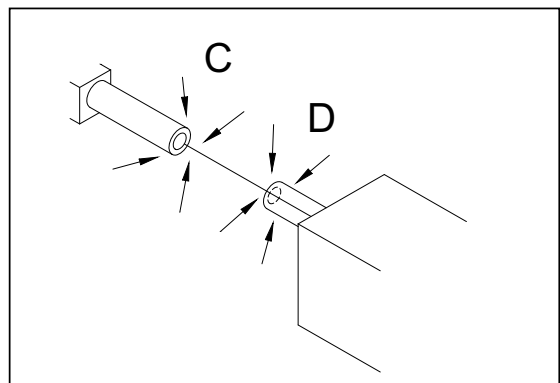
**4.5.2**

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

(Hole thru plug 1.32mm (.052"))

**4.5.3 Directional adjusting**

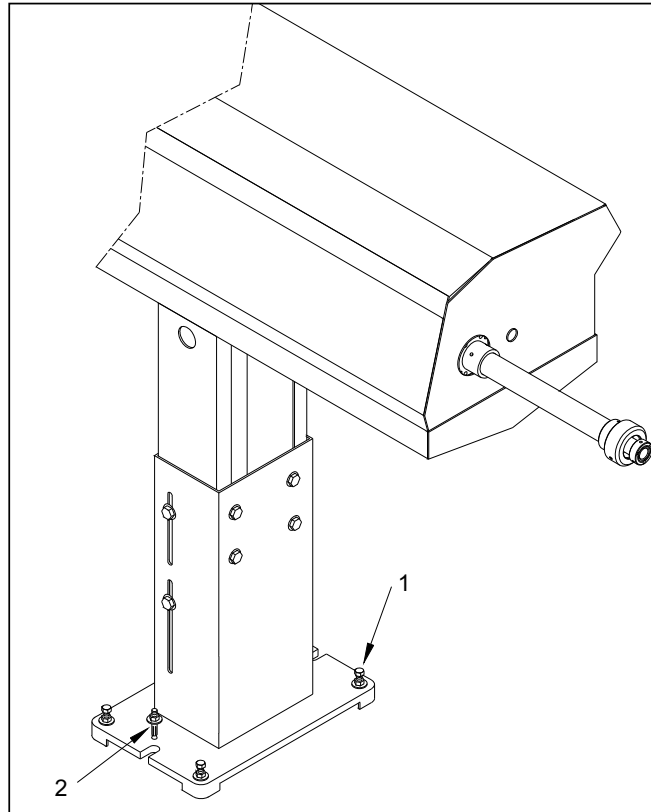
Use a ruler or centering device to check the center of the nylon string, nose adapter (C), and spindle (D). The distance of the four directions is to be within 0.15 mm.



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

4.6 Securing and fastening of the bar feeder

- 4.6.1** Drill floor with ½" masonry drill bit, install ½"x8" anchor bolts (supplied) and tighten (2).



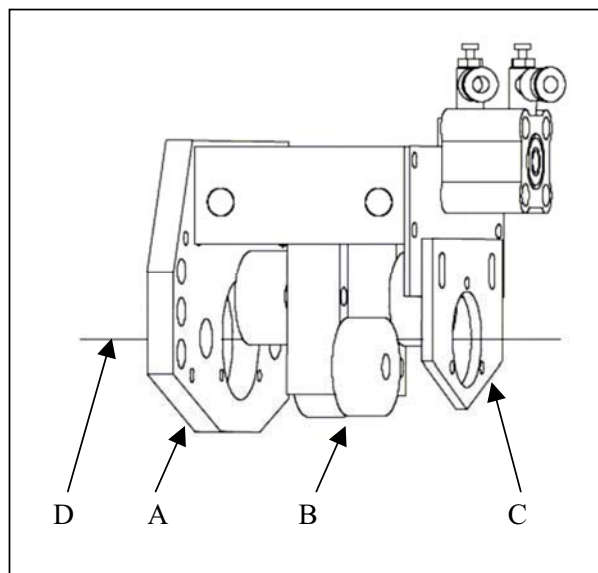
4.7 Installation accessories

4.7.1 Movable anti-vibration :

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

The moveable anti-vibration device (MAVD) is pre aligned and assembled at the factory according to lathe model. Lathe adapter plate (A), rollers (B) and nose plate (C) are aligned along line (D) to ensure rollers hold bar stock on center with spindle.

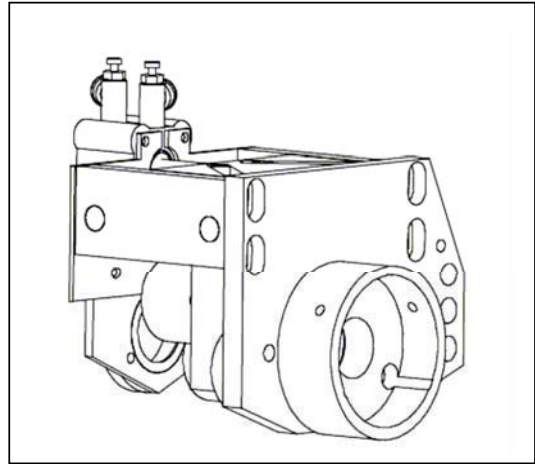
With many different lathe designs, the lathe adapters connecting the MAVD to the lathe may not allow for a direct bolt up. This will require the installer to align the MAVD on center to the lathe spindle with alignment string provided. Pull string using same steps in barfeed alignment, then with scale or alignment tool, align lathe adapter plate which will move rollers and nose adapter plate all together.



Lathe adapter will slide over round casting on back on spindle.

EX:

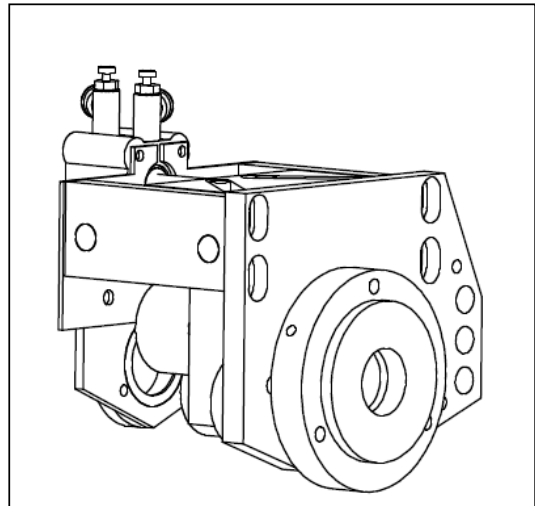
Citizen – A16, A20, C16, K16,
Star – SA12, SA16, SB16, SE16, SR10J,
SR16, SR20, SV12, SV20
Tsugami – BN20, BW12



Lathe adapter will bolt up to lathe casting on center with spindle. Another adapter mounted to plate will align inside bolted up adapter.

EX:

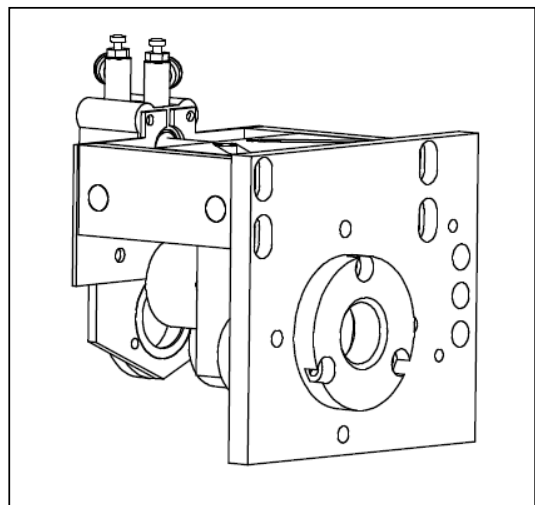
Citizen – B20, L16, L20
Tsugami – BE19, BU12, BU20,



Lathe adapter will bolt up to bracketry supplied by dealer. Bracketry has to be aligned to spindle first. MAVD will then be direct bolt up to lathe bracketry.

EX:

Tsugami – BS19, BS20



Lathe brackets that comes with barfeed, whole MAVD will have to be aligned at lathe adapter plate using string alignment method. Once tightened whole MAVD and brackets will be aligned.

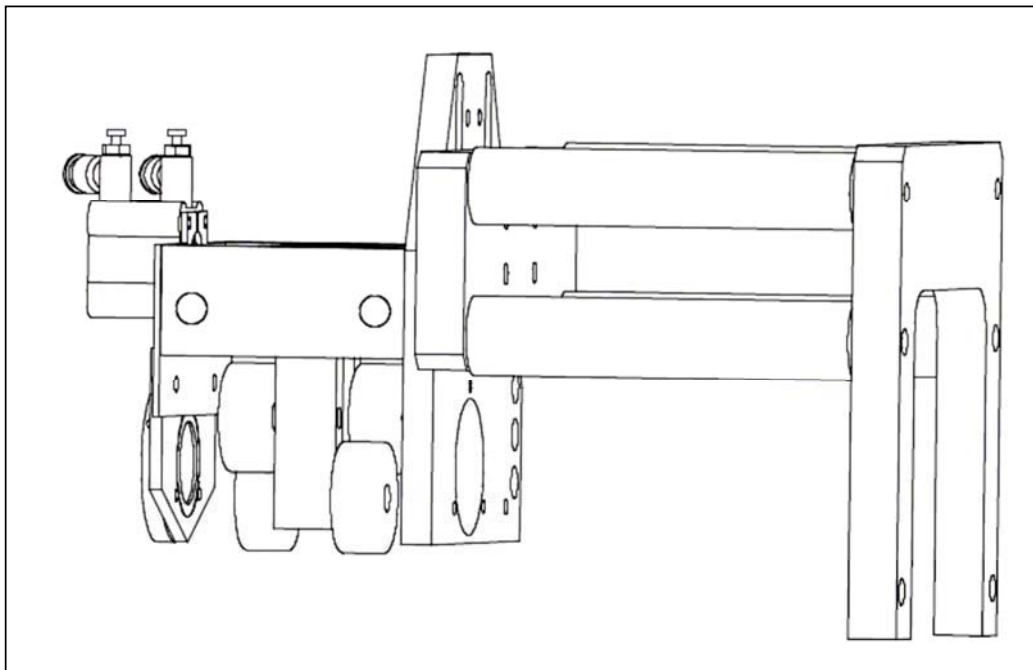
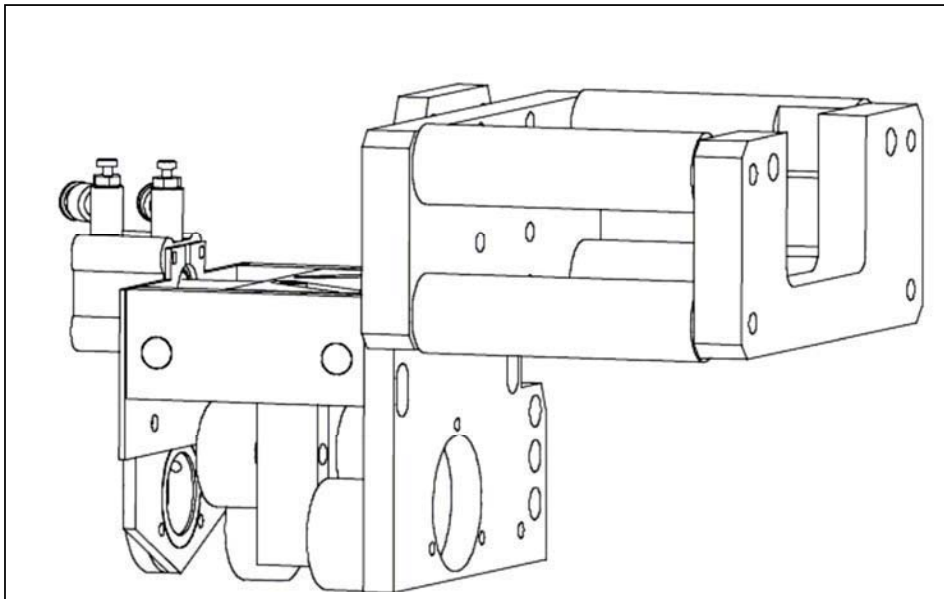
EX:

Hanwha – SL20HP, XD20H

KSI – SA12, SA20, SQC20

Nexturn – SA20

Nomura – NN20YB



4.7.2 Synchronization connecting rod:

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

Installation:

Move lathe Z axis to -Z over travel position.

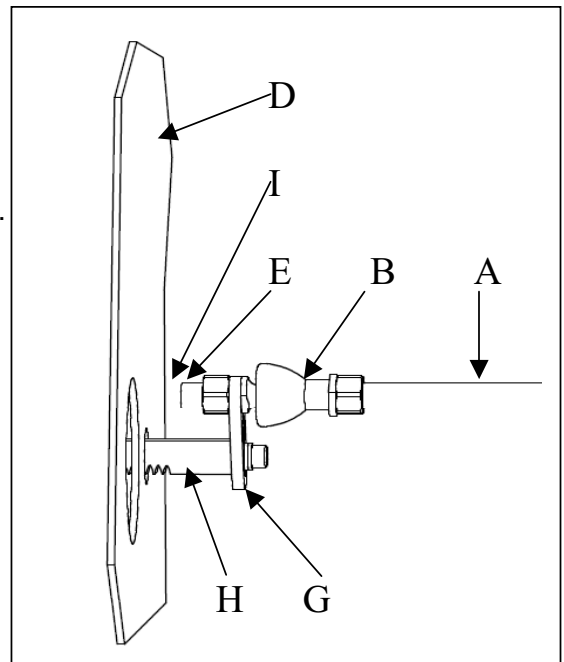
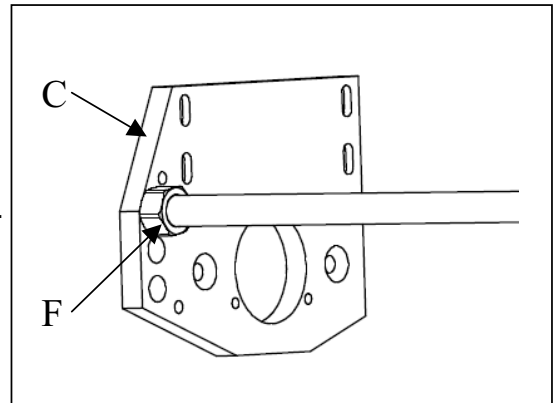
Thread threaded rod (A) into swivel (B).

Measure from back side of plate (C) to face of plate (D) and subtract 12.7mm (.500").

With measurement, measure from point (E) on swivel back along threaded rod (A), then cut to length. Thread threaded rod (A) flush with back side of plate (C) and tighten nut (F) as shown.

Connect adapter (G) to swivel (B) and tighten. Connect adapter (G) to square synchronization rod (H) with screws supplied.

Gap (I) should be approximately 12.7mm (.500"). Move lathe Z axis forward and back checking for smooth operation and clearance of synchronization rod (H), adapter (G) and threaded rod (A).



4.7.3 Fixed front nose:

Cut nose to length to fit between barfeed and lathe. Oil recovery unit should fit up to lathe coolant collector, covering barstock .

4.7.4 Telescopic front nose:

The telescoping nose allows the barstock and pusher to be supported and protected during the full stroke of the lathes Z axis movement. It is connected from the bar feeder to the adapting nose plate on the movable anti-vibration device mounted on the back of the lathe spindle.

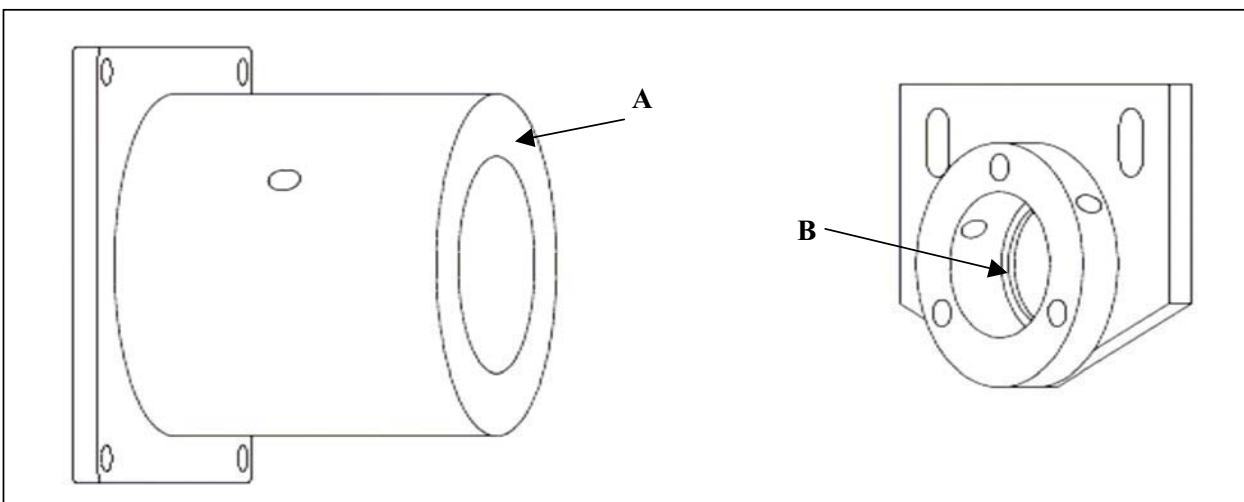
Installation:

Move lathe Z axis to $-Z$ over travel position. Measure from face of nose adapter (A) on bar feeder to inside shoulder (B) of moveable anti-vibration device on lathe.

Note measurement (#1).

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

If lathe has a chuck change position closer to the guide bushing than $+Z$ over travel, measure to chuck change position.



With telescoping nose in hand, find slight groove (D) (Distance from end of telescoping nose (C) to groove (D) is 45mm / 1.77"). Collapse telescoping nose to its shortest dimension, with measurement #1, measure from point (D) forward and mark the position on the nose (E).

Extend telescoping nose to its longest dimension, with measurement #2, measure from point (D) forward and mark the position (F).

Point F should be behind point E as shown below.

If not contact Edge Technologies for further instructions.

Divide the distance between points (E) and (F) by 2 and cut straight through nose at point (G).



Slide end on nose (C) into nose adapter (H) up to point (D). **Grove (D) will be flush with face (A).** Tighten screws to hold nose in place.

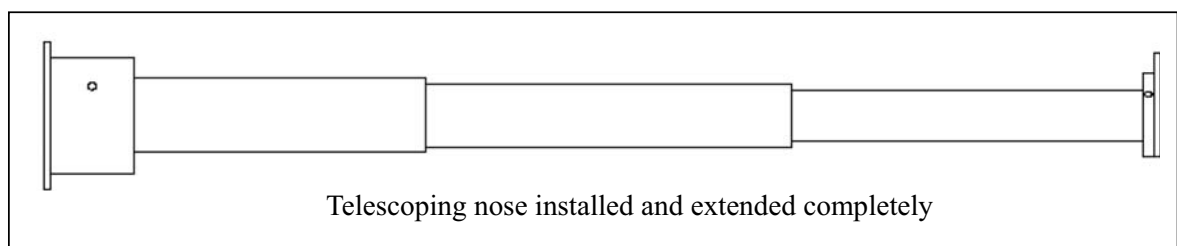
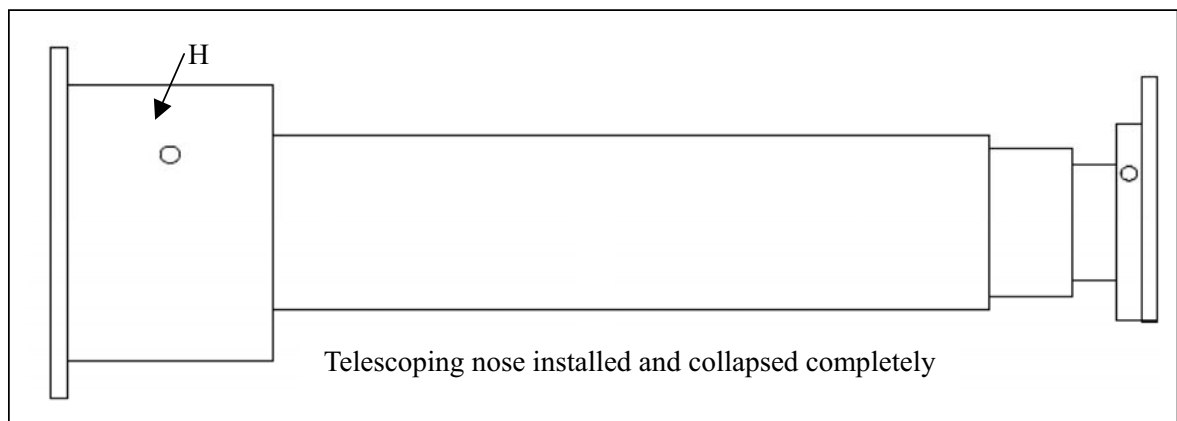
Collapse telescoping nose all the way, while slowly moving lathe Z axis to -Z over travel position, check that moveable anti-vibration device inside shoulder (B) does not touch new cut end of telescoping nose once lathe reaches -Z over travel.

If it does, remeasure all distances and recut telescoping nose.

Move lathe Z axis to +Z over travel or chuck change position and check that new cut end of telescoping nose touches inside shoulder (B) on moveable anti-vibration device.

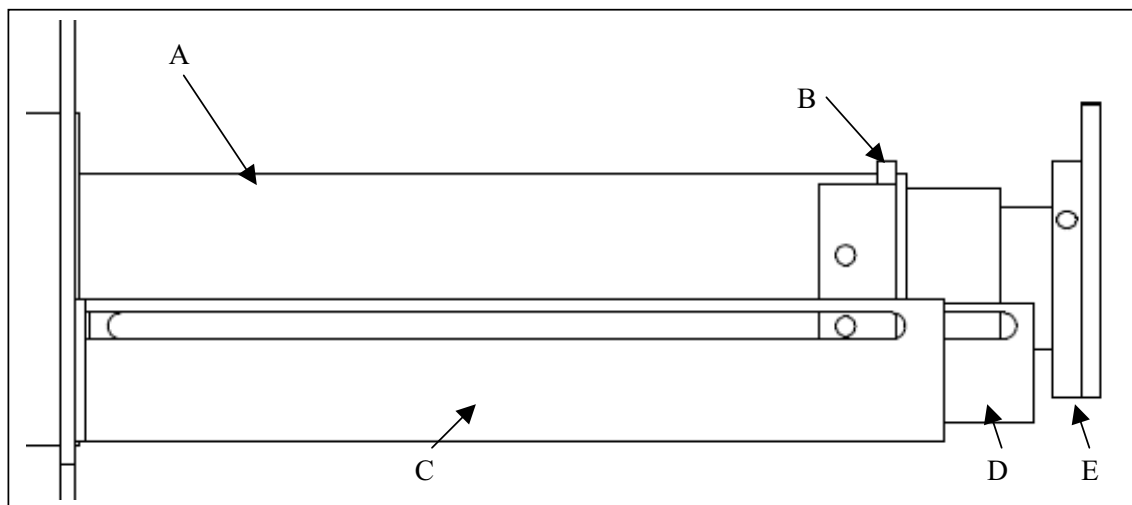
If it does not, the nose has been cut to short, contact Edge Technologies for further instructions.

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



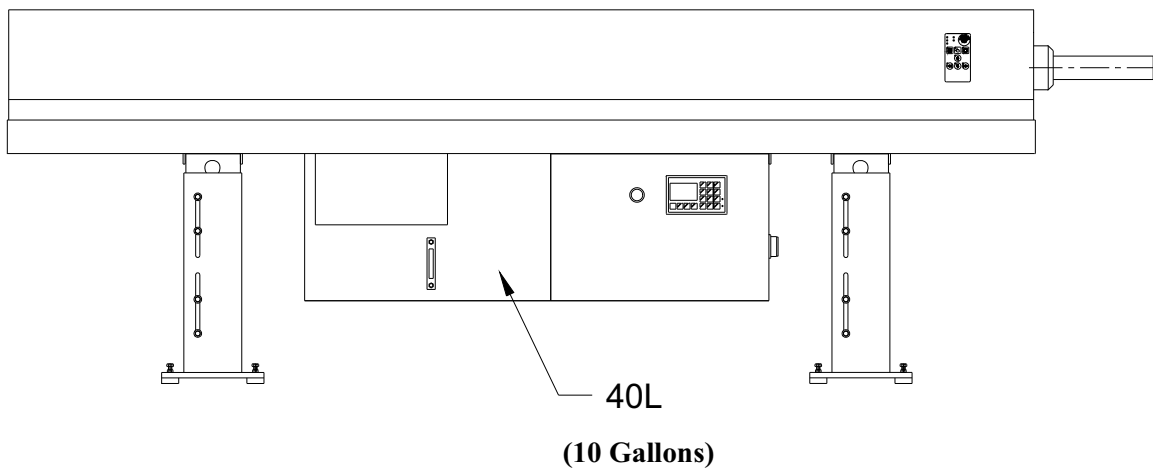
4.7.5 Oil tray:

Slide nose (A) through ring (B) on oil tray (C). Attach oil tray to front plate of bar feeder. Slide inner tray (D) all the way back toward bar feeder. Move lathe Z axis to +Z over travel. Slide inner tray toward moveable anti-vibration device (E) until there is a gap of 3-5mm. Lock tray in place at ring.



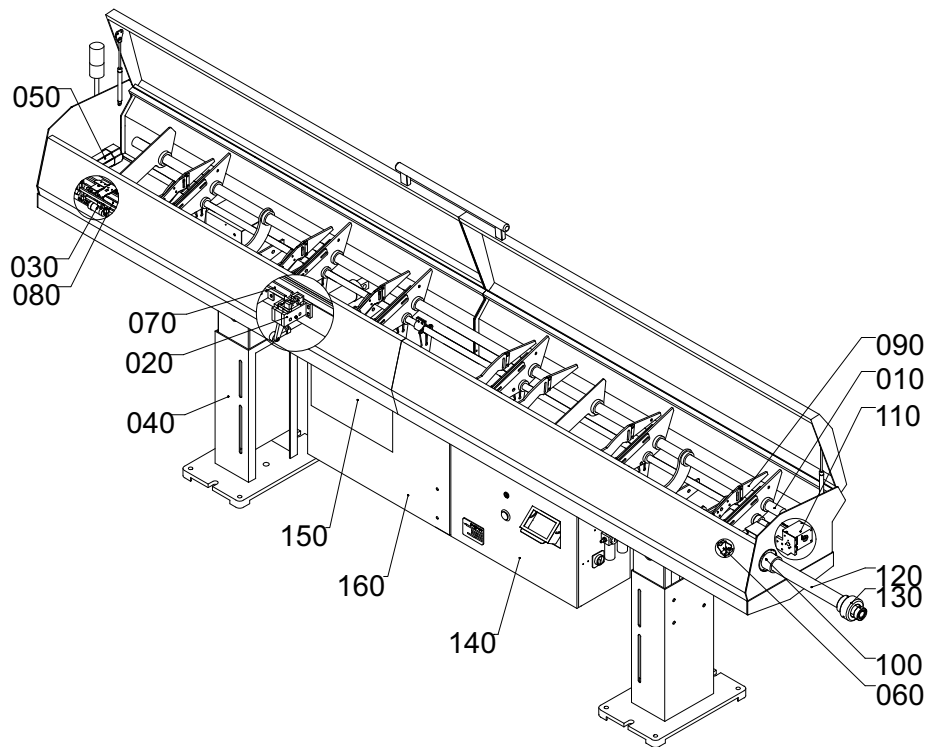
4.8 To lubricate — Guide channel

ISO and UNI brand	Brand	Description
CKB 100	Agip	Acer 100
	Api	Api Cis 100
	BP	Energol CS 100
	Castrol	Magna 100
	Chevron	Circulating Oil 100
	Elf	Movixa 100
	Esso	Nuto 100
	Fina	Solna 100
	IP	IP Hermea 100
	Kluber	Crucolan 100
	Mobil	Vectra Oil Heavy
	Olio FIAT	Daphne LPN 100
	Roloil	Arm V 100
	Shell	Vitrea 100 Tellus C 100
	Tamoil	Tellus C 100
	Texaco	Industrial Oil 100
	Total	Cortis 100
	Q8	Azolla ZS 100



5. ADJUSTMENTS AND SETTING

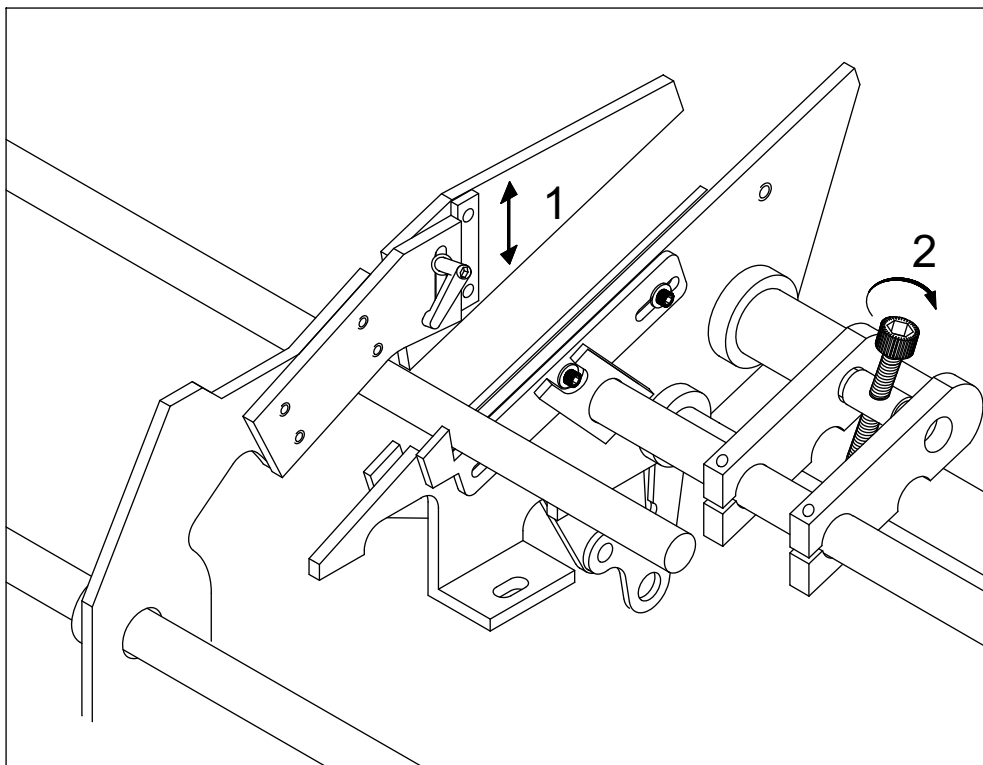
5.1 Bar feeder components



010	FRAME DEVICE
020	GRIPPERS
030	LOADING-UNLOADING CONTROL
040	BASES AND BEAM
050	FEED MOTOR DEVICE
060	CUTTING DEVICE
070	GUIDE CHANNEL
080	BAR PUSHER DEVICE
090	SUPPORT
100	FIRST ANTI-VIBRATION DEVICE
110	SYNCHRONIZATION DEVICE
120	TELESCOPIC FRONT NOSE / FIXED FRONT NOSE
130	GATHER OIL RING
140	ELECTRONIC CABINET
150	PUMP
160	OIL TANK

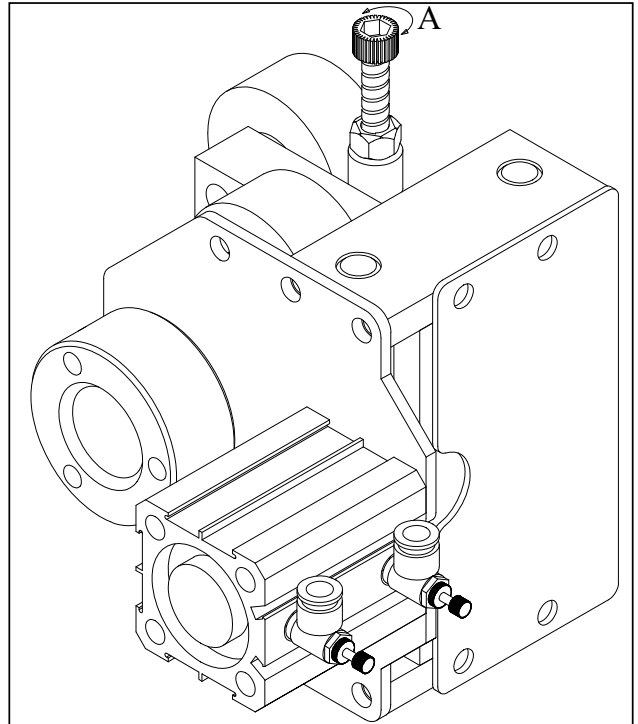
5.2 Adjustment of the loading device

- 5.2.1** Loosen the locking lever for the support plate (1) and lift the plate to the highest position.
- 5.2.2** Place one of the bar 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) .
- 5.2.5** Repeat above steps when changing bar diameters.



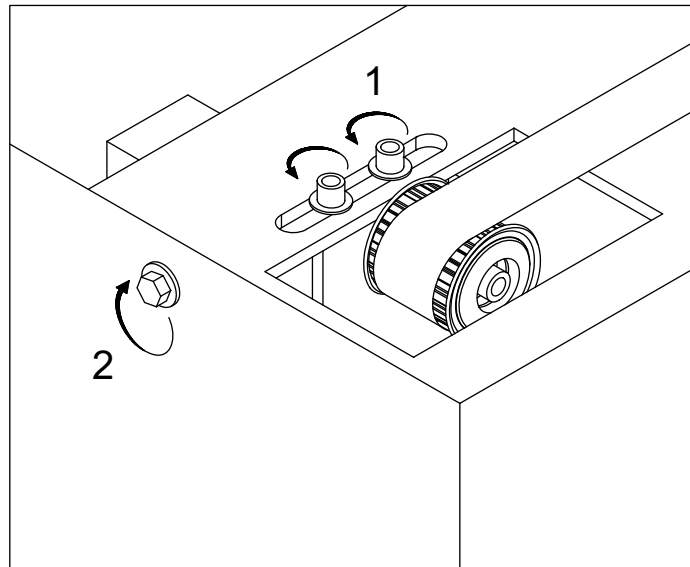
5.3 Installation and adjustment – moveable anti-vibration device (MAVD) and 1st anti-vibration device

- 5.3.1** Load a bar using the bar feeder into the lathe and close lathe collet.
- 5.3.2** Press the Pre-Auto button , both Anti-vibration devices will close.
- 5.3.3** Back screw (A) off counterclockwise until no tension is felt on the screw
- 5.3.4** Press the Manual button , then the Pre-Auto Button , this will make sure rollers are closed onto bar.
- 5.3.5** Rotate screw (A) clockwise until tension is felt, continue to rotate screw clockwise for ¼ turn.
- 5.3.6** Tighten jam nut.
- 5.3.7** Press the Manual Button 



5.4 Feeding Chain

- 5.4.1** Loosen Locking screw for the tensioner.
- 5.4.2** Rotate knob (2) clockwise to tighten the belt for suitable tension.
- 5.4.3** Tighten the locking screw (1) .



6. OPERATIONS AND DESCRIPTION

6.1 Material preparation

Caution & prevention

Please don't put the material out of standard.

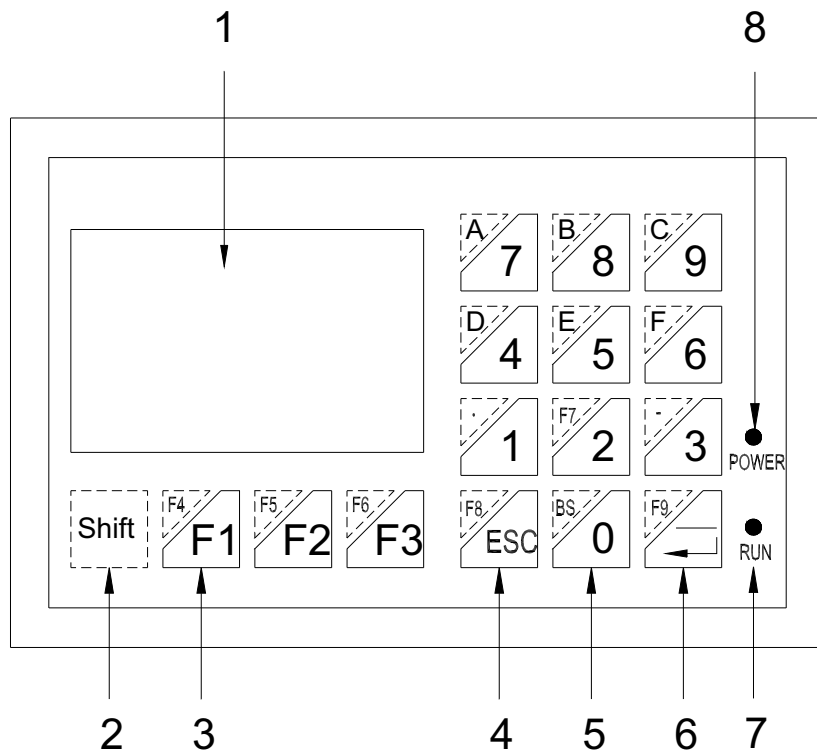
List1 – The max length of material

Type	Mod	Min length mm (ft)	Max length mm (ft)
C-320	21	914 (3)	2100 (6.8)
	37	914 (3)	3800 (12.5)
	44	914 (3)	4400 (14.4)

The flatness of material must be within 0.5mm/M

6.2 Operator interface description

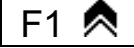
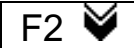
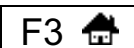
6.2.1 Function :



NO.	Function
1	LCD Display area
2	Shift
3	Function
4	ESC
5	Number
6	Enter
7	Run light
8	Power light

6.2.2 Shift screen :

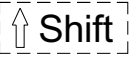
Press the key according to the indication on the display.

- (1)  : Page up
- (2)  : Page down
- (3)  : Back to the main menu

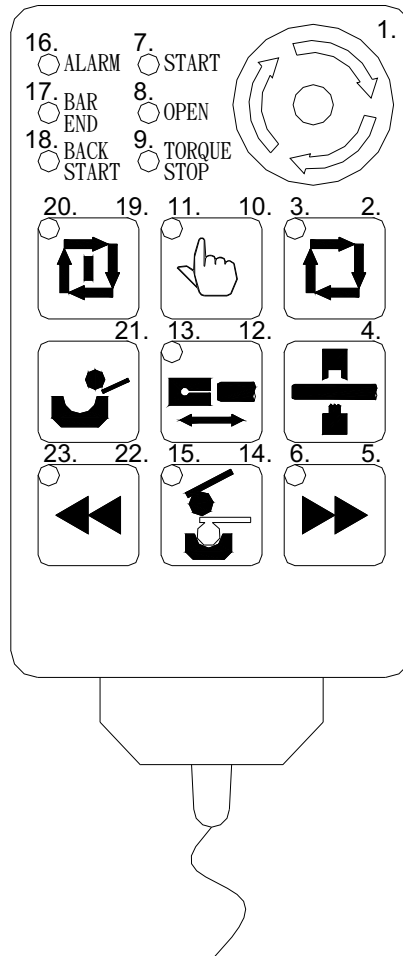
6.2.3 Value change :

- (1) Depress numbers as you require from 0~9.
- (2) Press enter  again, the value is changed. If you want to give up the value, press .

6.2.4 Usage of key from F1~F9 :

- (1) Select F1~F3, press these three keys directly.
- (2) Select F4-F9, press and hold  key, and then select F4-F9.

6.2.5 The function and operation of keys



NO.	Code	Function	NO.	Code	Function
1.	PB2	Emergency STOP	13.	LDS3	Clamping on light
2.	DS6	Pre-automatic mode	14.	DS4	Channel open/close
3.	LDS6	Pre-automatic mode light	15.	LDS4	Channel close light
4.	DS10	Grippers clamping/unclamping	16.	L2	Alarm light
5.	DS1	Manual advance (Right) Manual return (Left)	17.	L1	Bar end
6.	LDS1	Zero point light (Left)	18.	L5	Bar change light
7.	L3	Cycle start light	19.	DS5	Automatic mode
8.	L4	Chuck open light	20.	LDS5	Automatic mode light
9.	L6	Torque stop light	21.	DS9	Manual loading
10.	DS7	Manual mode	22.	DS2	Manual return (Right) Manual advance (Left)
11.	LDS7	Manual mode light	23.	LDS2	Zero point light (Right)
12.	DS3	Manual clamping on/off			

6.2.6 The special operation

1. Rezero bar feeder

Open lathe collet

Make sure pusher is in channel and forward of zero switch

Press and hold pre-auto  for 8 seconds until pusher starts to move

Release pre-auto , pusher will move to zero switch and stop

2. Advance / retreat at low-speed

(When the lathe is on the left, the direction of  and  are reversed)

① Advance at low-speed , press  and .

② Retreat at low-speed , press  and .

3. Automatic loading of bar

Open lathe collet

Jog pusher until zero position light is on

Press  to move pusher back and turn light on

Press  for channel to open and pusher to rise and turn light on

Press pre-auto  until light is on, then auto  until light is on

Magazine will load bar into channel and bar change will start.

Once bar is in lathe collet and at facing position the barfeed will time out after

20 sec. with an alarm unless the lathe collet is closed or the manual button  on the bar feeder is pressed.

4. Independent manual movement

Press  key until,  and  flash on and off.

Then press



: Manual moveable anti-vibration device



: Manual 1st anti-vibration device



: Manual 2nd anti-vibration device (channel must be open first)



: Manual 3rd anti vibration device (channel must be open first)



: Manual 4th anti vibration device (channel must be open first)

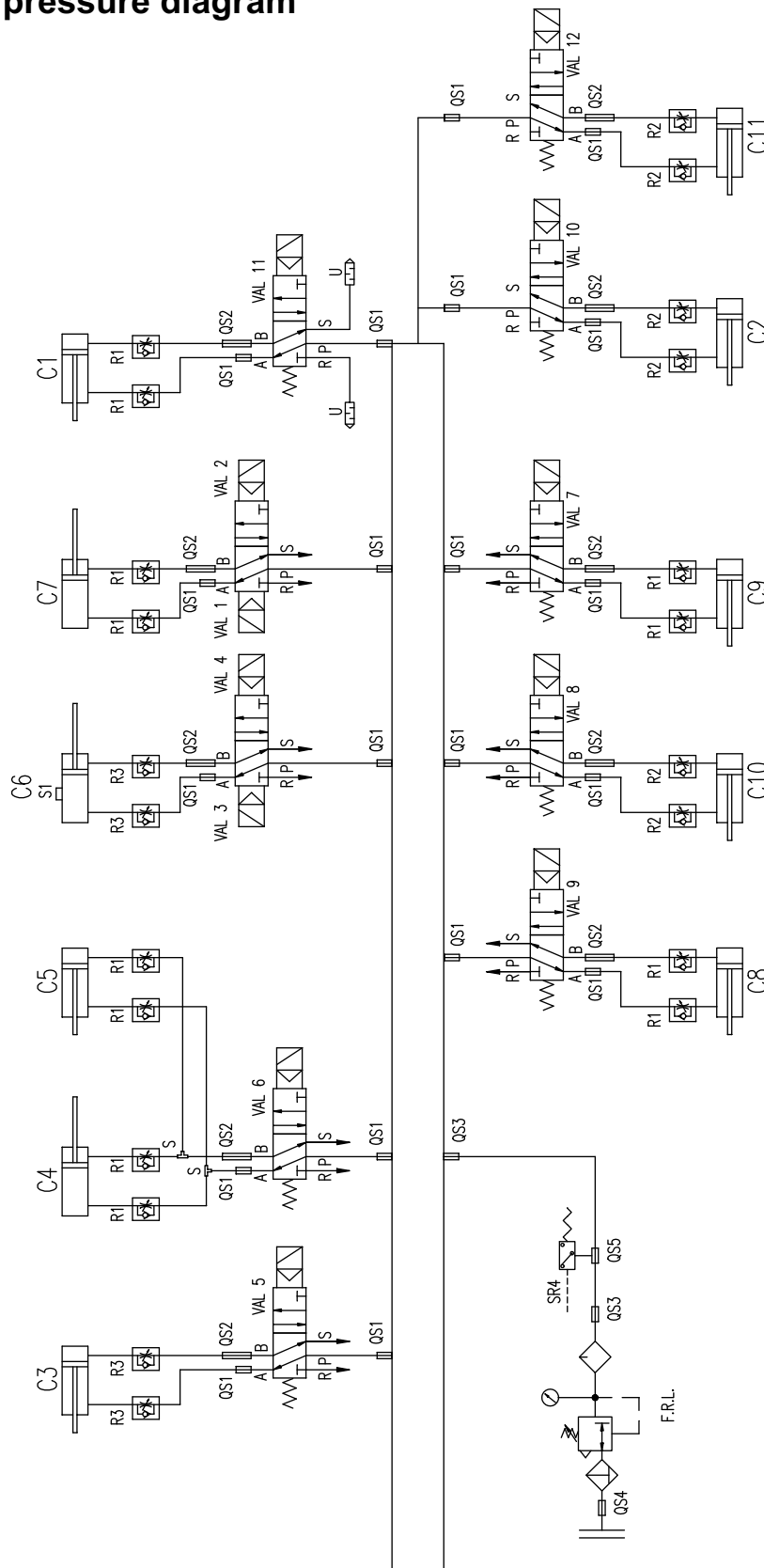


: Manual synchronization device

Each device will turn on then off or open the close

6.3 Solenoid valve diagram

6.3.1 Air pressure diagram



6.3.2

HP Series		See also list	Drawn 2006/05/04	Checked 2006/05/04	
Item designation	Part NO.	Description and function		Suppliers reference	Supplier
C10	A11110200	PISTON CYLINDER	1 st Guide up	MAL-CA-20×50	AIRTAC
C8			2 nd Guide up		AIRTAC
C1			3 rd Guide up		AIRTAC
C9	A11130100		1 st anti-vibration	SDA 25×20	AIRTAC
C2			Movable anti-vibration		AIRTAC
C3	A11110601		Clamping	MAL-CA-40×75(90°)	AIRTAC
C4	A11110400		Loading	MAL-CA-40×25	AIRTAC
C5	A11110700		Cutting	MAL-CA-20×10	AIRTAC
C6	A11150200		Clamping	SC-50×50-S-CA	AIRTAC
C7	A11110300		Bar pusher	MAL-CA-25×75	AIRTAC
C11	A11132100		Cylinder	SDA 40x5	AIRTAC
VAL 8	A12120100	MECHANICA LLY ACTUATED VALVE	1 st Guide up	5/2 WAY VALVE	AIRTAC
VAL 9			2 nd Guide up		AIRTAC
VAL 11			3 rd Guide up		AIRTAC
VAL 7			1 st anti-vibration		AIRTAC
VAL 10			Movable anti-vibration		AIRTAC
VAL 5			Clamping		AIRTAC
VAL 6			Loading / Cutting		AIRTAC
VAL 12			Synchronization		AIRTAC
VAL 3 / VAL 4	A12120200		Clamping in / Clamping out		AIRTAC
VAL 1 / VAL 2			Bar pusher rise / Bar pusher down	AIRTAC	
R1	A12130100	FLOW REGULATOR		JSC 6-01 1/8" , Ø6	AIRTAC
R2	A12130300			JSC 6-M5 M5, Ø6	AIRTAC
R3	A12130400			JSC 6-02 1/4" , Ø6	AIRTAC
S1	A12140100	SENSOR		CS1-U	AIRTAC
QS1	A13120500	QUICK JOINT		SPL 8-02 1/4" , Ø8	AIRTAC
QS2	A13120400			SPLL 6-02 1/4" , Ø6	AIRTAC
QS3	A13120500			SPL 8-02 1/4" , Ø8	AIRTAC
QS4	A13110301	QUICK COVPLER		APM-20	AIRTAC
QS5	A15140200	JOINT		1/4"	AIRTAC

6.4 Parameter list and description

Mark	Content	Description	Actual Value	Default value
F1 User parameter				
※		Part length + cutoff tool width		100 mm
※		Collet open pusher speed		20%
※		Collet open pusher torque		20%
※		Collet closed pusher speed		80%
※		Collet closed pusher torque		6%
※		Manual pusher speed		30%
※		Manual pusher torque		30%
※		Movable anti-vibration opening position		2900 mm
※		First feeding speed		20%
※		Oil pump shutoff position		0 mm
※		Long feed safety max. distance		5 mm
※		Short feed safety min. distance		0 mm
※		Sync device disengagement position		0 mm
		Feeding slowdown position		0 mm
Installer use only as below				
F2 Fixed parameter				
#	Enter password 258	Facing position		1435 mm
#		Max. pusher forward travel		3920 mm
#		First anti-vibration opening position		2550 mm
#		Second anti-vibration opening position		3200 mm
#		Third anti-vibration opening position		2200 mm
#		Fourth anti-vibration opening position		1350 mm
#		First feed max. travel		1438 mm
#		Cycle start delay after bar change		.5 sec.
#		Bar change return delay		0 sec.
#		Pushing after collet close		.2 sec.
#		Close collet timeout		0 sec.
#		Open collet timeout		0 sec.
#		Bar change speed		90%

Technicians use only					
F3 System function					
#	Enter password 258	F4: Movable anti-vibration			On
◎		F5: Language select			English
		F6: Program version	PLC		
			HMI		
		Enter next page			
		F4: Balance speed			Off
		F5: Balance torque			Off
F4					
#		F4: Demo mode On /Off			Off
#		F5: LOGO shift			EDGE
#		F6: CNC/CAM shift			CNC
		Enter next page			
#		F4: Sliding / Fixed headstock			Sliding
#		F5: Interface signal test			
#		F6: Facing to position / stop			Position
		Enter next page			
#		F4: Extraction / Ejection			Extraction

※ *Modify value of program while change work piece*

◎ *Depend on situation*

Setting up by technician

6.4.1 Description of settings and parameters of machine :

F1 Turning parameter

Monitor status	Setting unit	Permit setting area	Suggested setup
Description : Monitor present bar being machined at any time when in auto. Watch item : 1. Pusher position – Position of pusher from bar feeder zero. 2. Material remaining – amount of material left on bar being machined. 3. Parts remaining – amount of parts left on bar being machined.			
Part length + cutoff tool width	Setting unit	Permit setting area	Suggested setup
	mm	0~999	New part length
Description : Reset this parameter each time part length changes. Setting method : Part length + cutoff tool width = Total part machining length Note : Note In sliding headstock mode, long feed safety will automatically be set to 5mm each time this value is changed.			
Collet open pusher speed	Setting unit	Permit setting area	Suggested setup
	%	0~50	20%
Description : Sets the pusher forward speed in automatic with lathe collet open. Setting method : According to material size in relation with the collet open pusher torque. Note : Adjust in small increments to avoid bending of material, breakage of cutoff tool, or hitting material stop excessively hard.			
Collet open pusher torque	Setting unit	Permit setting area	Suggested setup
	%	0~99	20%
Description : Sets the pusher forward torque in automatic with lathe collet open. Setting method : According to material size and in relation with collet open pusher speed. Note : Adjust in small increments to avoid bending of material, breakage of cutoff tool, or hitting material stop excessively hard.			

Collet closed pusher speed	Setting unit	Permit setting area	Suggested setup
	%	0~99	80%
Description : Sets the pusher forward speed in automatic with lathe collet closed. Setting method : According to material size and in relation with the torque of chuck close. Note : Adjust in small increments to avoid bending of material.			
Collet closed pusher torque	Setting unit	Permit setting area	Suggested setup
	%	0~99	6%
Description : To set the feeding torque when CNC is chuck close in machining automatically. Setting method : According to material size and in relation with the speed of chuck close. Note : Adjust in small increments to avoid bending of material.			
Manual pusher speed	Setting unit	Permit setting area	Suggested setup
	%	0~50	30%
Description : Sets the pusher forward speed when bar feeder is in manual. Setting method : Enter the speed needed to push bar.			
Manual pusher torque	Setting unit	Permit setting area	Suggested setup
	%	0~100	30%
Description : Sets the pusher forward torque when bar feeder is in manual. Setting method : Enter the torque needed to push bar.			
Movable anti – vibration opening position	Setting unit	Permit setting area	Suggested setup
	mm	0~4000	Short 25 ~ 50 mm from Movable anti-vibration
Description : The movable anti–vibration opening position allows the pusher to proceed past the movable anti–vibration device in automatic mode. Value must be changed accordingly each time lathe Z axis rechuck position is changed. Setting method : Move lathe Z axis to part rechuck position. Jog pusher forward until pusher collet is just visible inside moveable anti-vibration device. Subtract 25 ~ 50 mm from pusher position and input value. Note : If unable to set this setting each time, move lathe Z axis to –Z over travel position away from guide bushing. Jog pusher forward until pusher collet is just visible inside moveable anti-vibration device. Subtract 25 ~ 50 mm from pusher position and input value. Value will not have to be changed again.			

First feeding speed	Setting unit	Permit setting area	Suggested setup
	%	0~50	20%
Description : The first feeding speed is set for when material is being loaded into lathe. Setting method : Set value according to material diameter for first feeding speed. Note : Set speed so material loads smoothly and does not drift off pusher because of inertia.			
Oil pump shutoff position	Setting unit	Permit setting area	Suggested setup
	mm	0~4000	3000mm
Description : Position of pusher when oil shuts off when bar feeder is in automatic. Setting method : Move lathe Z axis to –Z over travel position, move barfeed pusher so pusher collet can be seen inside moveable anti-vibration device. Set value matching pusher position. Note : Value is initially set to zero upon arrival at customer, please set during installation. Oil pump will come on once barfeed is in automatic.			
Long feed safety max. distance	Setting unit	Permit setting area	Suggested setup
	mm	0~999	Finish product length + 5~30mm
Description : When pusher moves further than value set in automatic with lathe collet open, barfeed will alarm with long feed error. Setting method : Fixed headstock : Finish product length + permissible feeding error Sliding headstock : Permissible feeding error Ex : Fixed headstock : 15mm is automatically added to part length + cutoff tool width parameter and set automatically Sliding headstock : 5mm is set automatically Refer to figure 1 :			

Short feed safety max. distance	Setting unit	Permit setting area	Suggested setup
	mm	0~999	Finish product length - 5~10mm

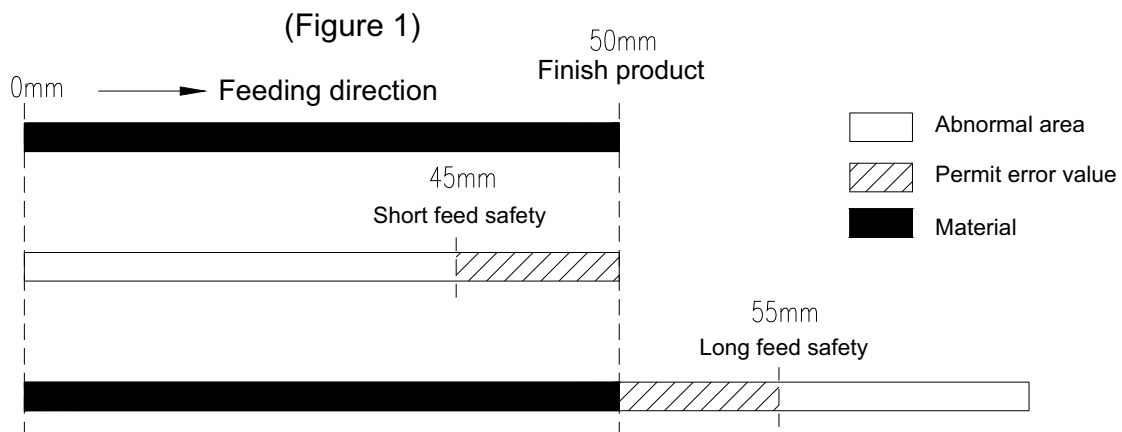
Description : When pusher moves less than value set in automatic when lathe collet closes, barfeed will alarm with short feed error.

Setting method : Fixed headstock : Finish product length - permissible feeding error
Sliding headstock : set to zero

Ex : Fixed headstock : 15mm is automatically subtracted to part length + cutoff tool width parameter and set automatically
Sliding headstock : 0mm is set automatically

Fixed headstock : Finish product length 50mm - error value 5mm = Short feed safety 45mm

Refer to figure 1 :



Sliding headstock : Sync. device disengagement position. Fixed headstock : Feeding slowdown position.	Setting unit	Permit setting area	Suggested setup
	mm	0~999	Sync. device disengagement position = The finish product length – 10mm

Description : The synchronization device will disengage prior to lathe collet opening so when lathe headstock moves to rechuck position, no delay is needed between lathe collet open and Z axis movement. (It is restricted to Sliding headstock mode only).

Feeding slowdown position : Allow slowdown of pusher during feedout of material to prevent material from hitting stock stop excessively hard. (It is restricted to Fixed headstock mode only)

Setting method :

Sliding headstock – Synchronization device opening position :

The finish product length – required to release range =

Synchronization device opening position

(Normally set to zero, synchronization device will disengage at lathe collet open and engage at lathe collet close)

Fixed headstock – Feeding slowdown position : Depend on the finish product length

Reference figure 4 :

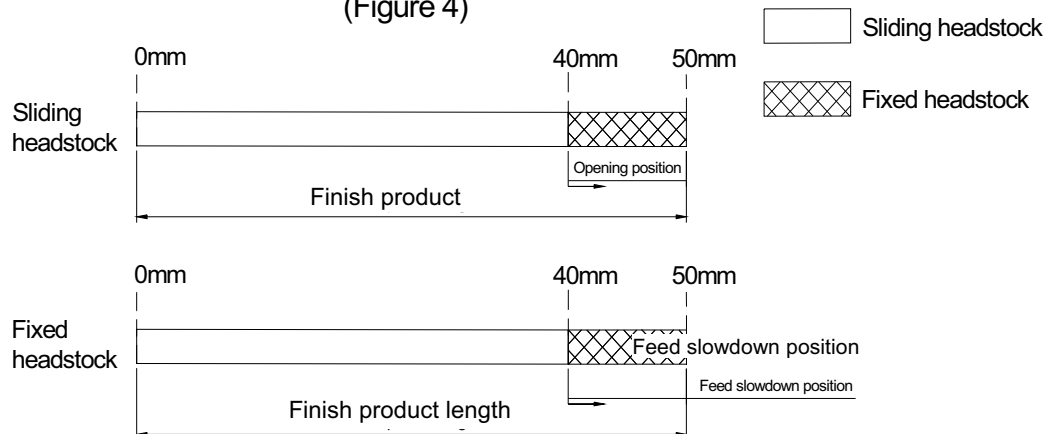
Synchronization device opening position :

The finish product length 50mm – 10mm = 40mm

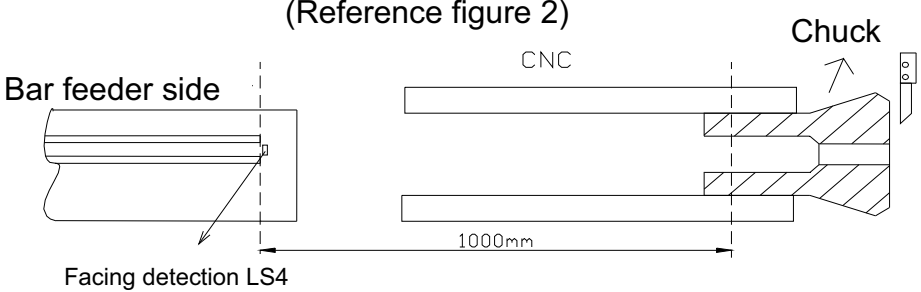
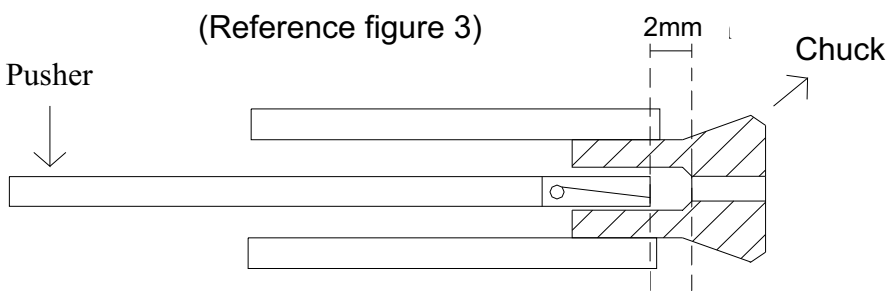
Feeding slowdown position :

The finish product length 50mm – 10mm = Feeding slowdown position

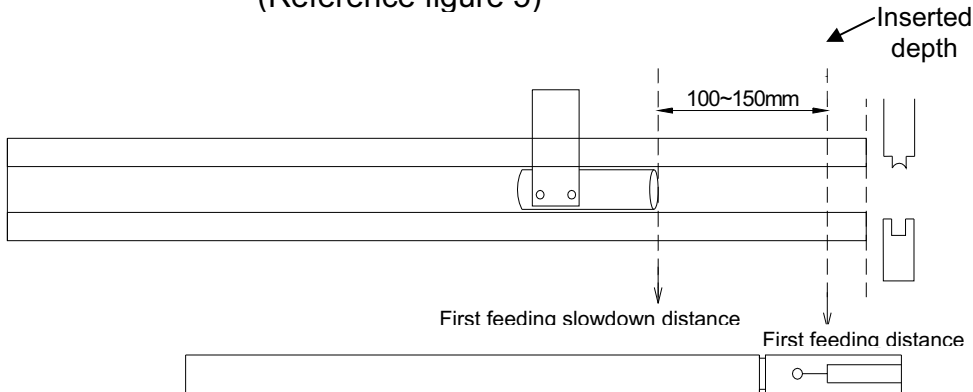
(Figure 4)



F2 Fixed parameter

Facing position	Setting unit	Permit setting area	Suggested setup
	mm	0~4000	Depend on actual length
Description : Position of new bar loaded automatically by barfeed. All bars regardless of length being loading to facing position when barfeed is in automatic. Setting method : Sliding headstock: Measure from facing flag (LS4) to face of guide bushing, subtract 50mm (2"), set value (In lathe bar change program set Z axis stroke for material extraction and introduction into guide bushing at 75mm (3")) Fixed headstock : Measure from facing flag (LS4) to face of collet, note value, add additional amount for lathe to cutoff, set total value. (Reference figure 2) 			
Maximum pusher forward travel	Setting unit	Permit setting area	Suggested setup
	mm	0~4000	Depend on actual length
Description : Maximum distance bar can feed into lathe. Setting method : Sliding headstock : Move lathe Z axis to over travel position toward guide bushing. In manual mode move pusher forward until pusher collet stops moving against lathe collet, subtract 2mm from current pusher position and set value. Fixed headstock : In manual mode move pusher forward until pusher collet stops moving against lathe collet, subtract 2mm from current pusher position and set value. (Reference figure 3) 			

First anti-vibration opening position	Setting unit	Permit setting area	Suggested setup
	mm	0~2650	2550mm
Description :	The first anti-vibration device will open just prior to the pusher collet reaching the first anti-vibration device in automatic.		
Setting method :	In manual jog pusher forward until pusher collet is 30~50mm away from first anti-vibration device. Set the value using the pusher position current value.		
Note :	First anti-vibration device should be open before the pusher collet arrives to avoid material separating from the pusher collet.		
Second anti-vibration opening position	Setting unit	Permit setting area	Suggested setup
	mm	3000~3375	3200mm
Description :	The second anti-vibration device will open just prior to the pusher flag reaching the second anti-vibration device.		
Setting method :	In manual jog pusher forward until pusher flag is 80-120mm away from second anti-vibration device. Set the value using the pusher position current value.		
Note :	The Second anti-vibration device should be open before the pusher flag arrives to avoid material separating from the pusher collet.		
Third anti-vibration opening position	Setting unit	Permit setting area	Suggested setup
	mm	2000~2375	2200mm
Description :	The third anti-vibration device will open just prior to the pusher flag reaching the third anti-vibration device.		
Setting method :	In manual jog pusher forward until pusher flag is 80-120mm away from third anti-vibration device. Set the value using the pusher position current value.		
Note :	The third anti-vibration device should be open before the pusher flag arrives to avoid material separating from the pusher collet.		

Forth anti-vibration opening position	Setting unit	Permit setting area	Suggested setup
	mm	1200~1475	1350mm
Description : The fourth anti-vibration device will open just prior to the pusher flag reaching the forth anti-vibration device. Setting method : In manual jog pusher forward until pusher flag is 80-120mm away from fourth anti-vibration device. Set the value using the pusher position current value. Note : The third anti-vibration device should be open before the pusher flag arrives to avoid material separating from the pusher collet.			
First feed max. travel	Setting unit	Permit setting area	Suggested setup
	mm	1400~1470	1438mm
Description : Position of new bar during first feed to allow pusher collet to enter material. Setting method : In manual mode open channel, move the first feeding pusher forward to the main pusher insert depth of limitation. Set the current value of pusher position. Note : Distance shall be set to avoid material collision with pusher collet at channel close. Distance should allow for pusher introduction onto material until stop in pusher is reached only. (Reference figure 5)  The diagram illustrates the first feed setup on a lathe. A horizontal bar is shown being fed into a lathe. A vertical line indicates the 'Inserted depth'. A horizontal dimension line shows a distance of '100~150mm' from the bar's end to the lathe's centerline. Below the bar, two vertical arrows point downwards, labeled 'First feeding slowdown distance' and 'First feeding distance'. A small inset shows a cross-section of the bar with a hole.			
Cycle start after bar change	Setting unit	Permit setting area	Suggested setup
	sec	0~10.0	0.5sec
Description : Delay after new bar reaches facing position before cycle start signal is sent from barfeed to lathe. Setting method : Enter value required for delay. Note : The longer the set time the longer bar change will take			

Bar change return delay	Setting unit	Permit setting area	Suggested setup
	sec	0~10.0	0 sec.
Description : When barfeed is sending End of Bar signal to lathe, lathe goes to bar change program, lathe collet will open, bar change signal is sent to barfeed. Once barfeed receives the bar change signal the barfeed will wait for value set then start bar change sequence) Setting method : Enter value required for delay. Note : If value is to long, pusher may start forward into lathe again.			
Pushing after collet closed	Setting unit	Permit setting area	Suggested setup
	sec	0~10	0.5sec
Description : Time pusher will continue to push bar after collet closes when in automatic (Collet open speed and torque parameters are used). Setting method : Enter value required to continue pushing. Note : Adjust only for time difference between when lathe collet open signal is lost to barfeed and lathe collet is fully closed.			
Closed collet timeout	Setting unit	Permit setting area	Suggested setup
	sec	0~999	Depend on cycle time of workpiece
Description : Time between collet close and the next collet open (machining time) when in automatic. If set time is reached alarm will occur. Setting method : Enter value for machining time plus 2-3 seconds. Note : Use when the lathe could stop unexpectedly during machine cycle. When set and lathe is stopped with collet closed, alarm will occur when time is reached.			
Open collet timeout	Setting unit	Permit setting area	Suggested setup
	sec	0~999	Depend on rechuck time of workpiece
Description : Time between collet open and collet closed (rechuck time) when in automatic. If set time is reached alarm will occur. Setting method : Enter the value of recheck time plus 2-3 seconds. Note : When set and lathe is stopped with collet open, alarm will occur when time is reached.			
Bar change return speed	Setting unit	Permit setting area	Suggested setup
	%	0~99	90%
Description : Speed pusher returns at during bar change. Setting method : Enter the value needed for return speed. Note : Return speed starts once pusher moves 200mm during return move.			

F3 System function – enter pass word 258

F4 : Movable anti-vibration device	Setting unit	Permit setting area	Default
	On / Off	On / Off	Off
Description : Sets the useable modes of the moveable anti-vibration device. On : The movable anti -vibration will open or close along with the chuck of the lathe after the pusher collet reaches the movable anti-vibration opening parameter plus 150mm. Off : The movable anti -vibration will open when the pusher collet reaches the movable anti-vibration device opening parameter and stay open until after the next bar change.			
F5 : Language select	Setting unit	Permit setting area	Default
	English	English	English
Description : This bar feeder provides multi languages to select according to different requirement. At present provide : F1 : English			
F6 : Program version		Program #	
	PLC		
	HMI		
Enter next page			
F4 : Balance Speed	Setting unit	Permit setting area	Suggested setup
	On / Off	On / Off	Off
Description : Balance the speed of the servo drive. Setting method : Contact Edge Technologies for procedure for balancing of drive.			
F5 : Balance torque	Setting unit	Permit setting area	Suggested setup
	On / Off	On / Off	Off
Description : Balance the torque of the servo drive. Setting method : Contact Edge Technologies for procedure for balancing of drive.			

F4 Particular Program modify– enter pass word

F4 : Demo Mode	Setting unit	Permit setting area	Note
	On / Off	On / Off	Off
Description : Sets the barfeed to demo mode. (Set collet open and bar change to on)			
F5 : LOGO	Setting unit	Permit setting area	Note
	EDGE	EDGE	EDGE
Description : Sets the logo on the operators panel.			
F6 : CNC/CAM mode	Setting unit	Permit setting area	Note
			Switch function
Description : Sets the style of lathe attached to barfeed. CNC or CAM .			
Enter next page			
F4:Sliding / Fixed headstock	Setting unit	Permit setting area	Note
	Sliding / Fixed	Sliding / Fixed	Sliding
Description : Sets the type of lathe, sliding headstock or fixed headstock .			
F5: Interface signal test	Setting unit	Permit setting area	Note
			Test signals of bar feeder and lathe
Description : Sets output signals to barfeed once interfaced to lathe. Test item : F1 Bar end F4 Start itself F2 Alarm F5 Start F3 Inching F6 Auto			
F6 : Facing to position / stop	Setting unit	Permit setting area	Note
	Position / Stop	Position / Stop	Position
Description : Set the new material position. To position : The new bar will be loaded to set measured position in the lathe then send cycle start signal. Facing close : The new bar will be loaded to set measured position in the lathe, pause, then feed again until pusher hits stock stop in lathe then send cycle start signal.			

Enter next page

**F4: Extraction /
Ejection**

Setting unit

Permit setting area

Note

Extraction

Description : Select removal method of remnant**Extraction :** During bar change the barfeed will pull the remnant back with the pusher, the grippers will check the remnant was pulled out of the lathe spindle and drop the remnant in the catch pan.**Ejection :** during bar change the barfeed will leave the remnant in the lathe spindle. The barfeed pusher will return and load a new bar. (The grippers will not check for the presents of the remnant). During loading of the new bar into the spindle the bar will push the previous remnant through the lathe collet and into the bottom of the lathe.**Can be used on fixed headstock lathes at any time with a front ejection collet****(Should only be used on sliding headstock lathes when in fixed headstock mode)**

Setting unit

Permit setting area

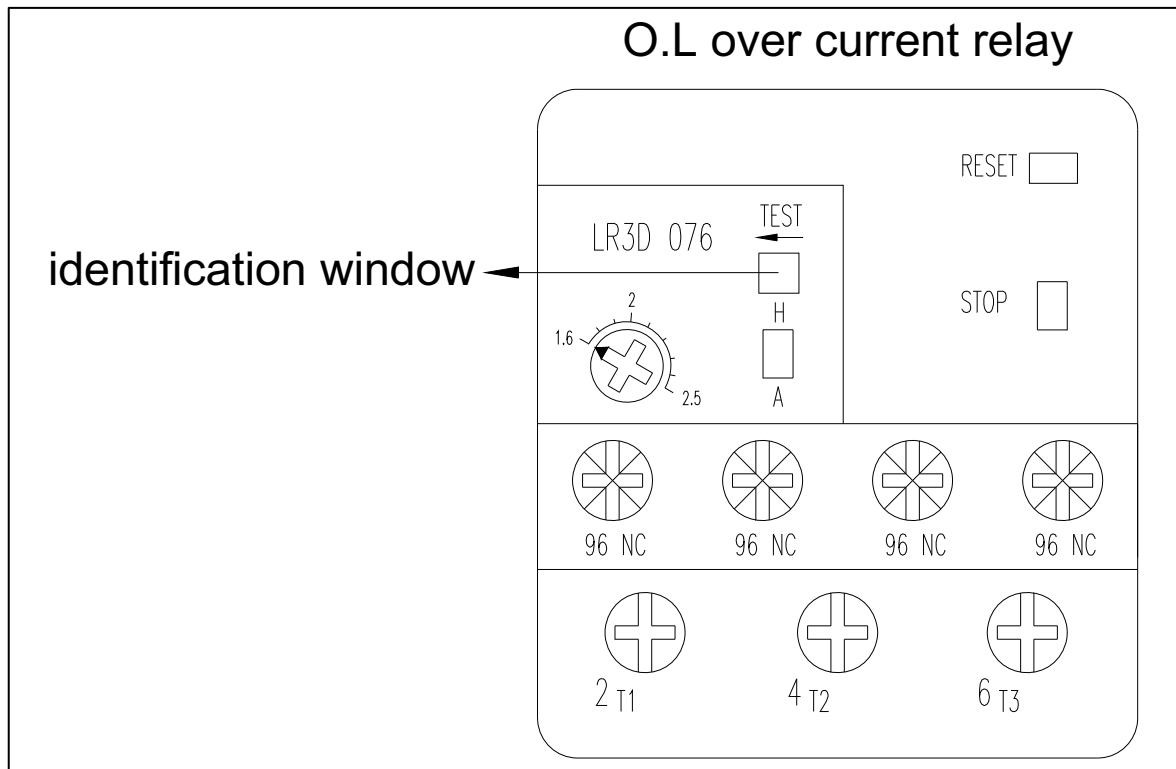
Note

6.5 Alarm message list

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

Alarm14	Pusher collet introduction onto collet timeout	Check collet to small for material O.D., material O.D. to large, No chamfer on material, Check switch SR1, check air pressure.
Alarm15	Material is too short.	Material length is too short to load automatically
Alarm16	Barfeed cannot reach facing position	Check material for burr or chamfer, check the value of facing position.
Alarm17	Lathe failed to start after cycle start	Check lathe wiring for receiving of cycle start signal
Alarm18	LS3 and LS4 on at the same time	Check position of LS3 and LS4
Alarm19	LS2 and SR1 on at the same time .	Check position of LS2 and SR1
Alarm20	Collet close timeout	Lathe collet close longer that set parameter timer
Alarm21	Servo alarm	Check the alarm No. on LCD display of servo. Reset with power down of barfeed by 3 phase switch for 5 sec.
Alarm22	Barfeed not in auto when lathe is running	After lathe collet opens and close 3 times with the barfeed in manual alarm will occur.
Alarm23	Oil pump overloads tripped	Reset overloads, check for oil in tank, check electrical connections.
Alarm24	Program has mistake	Program downloaded incorrectly, download again.
Alarm25	Hood not closed during bar change.	Hood must be closed during bar change, check hood safety switch.
Alarm26	Collet open timeout	Lathe collet open longer that set parameter timer
Alarm27	Synchronization device disengaged at pusher zero	Pusher within 20mm of zero with sync engaged (lathe collet closed). Move pusher past 20mm and close collet.
Alarm28	Cannot jog pusher with collet closed	Synchronization device engaged. Open lathe collet to jog barfeed pusher manually
Alarm29	Air pressure low	Increase air pressure.

6.5.1 Description of Alarm 23:



O.L position of unit, please refer to page 5-2.

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

6.5.2 Description of alarm 21:

**CAUTION**

- When any alarm has occurred, eliminate its cause, ensure safety, then reset the alarm, and restart operation. Otherwise, injury may occur.
- If an absolute position erase (AL.25) occurred, always make home position setting again. Otherwise, misoperation may occur.
- As soon as an alarm occurs, turn off Servo-on (SON) and power off the main circuit.

POINT

- When any of the following alarms has occurred, always remove its cause and allow about 30 minutes for cooling before resuming operation. If operation is resumed by switching control circuit power off, then on to reset the alarm, the servo amplifier and servo motor may become faulty.
 - Regenerative error (AL.30)
 - Overload 1 (AL.50)
 - Overload 2 (AL.51)
- The alarm can be deactivated by switching power off, then on press the "SET" button on the current alarm screen or by turning on the reset (RES). For details, refer to Section 10.2.1.

When an alarm occurs, the trouble (ALM) switches off and the dynamic brake is operated to stop the servomotor. At this time, the display indicates the alarm No.

The servo motor comes to a stop. Remove the cause of the alarm in accordance with this section. The optional MR Configurator (servo configuration software) may be used to refer to the cause.

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

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

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

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

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

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

7. MAINTENANCE

7.1 General maintenance



Hazard-warning

Before doing bar feeder maintenance, turn off 3 phase power.

For consistent operation of the bar feeder, please do maintenance checks regularly.

The area around the barfeed should be kept clean to avoid safety issues.

Using petroleum or other solvents may damage plastic components.

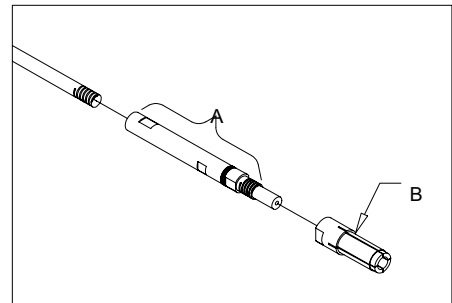
7.2 Regular maintenance

List 1.— Regular maintenance

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				●	

7.2.1 Check the pusher collet and revolving tip

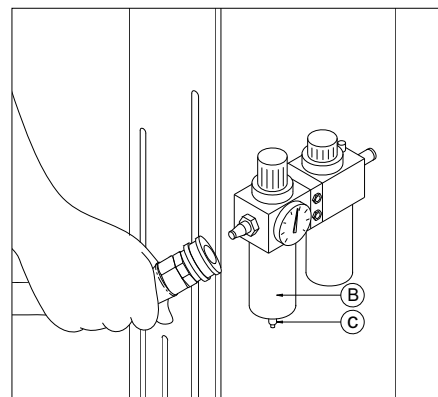
Check that revolving tip (A) rotates smoothly
 Check that pusher collet (B) has the correct tension.



7.2.2 Check the air regulator

Check the bottle (B) for water.

Press button (C) to exhaust water out of bottle.



8. Cause and breakdown and troubleshooting

8.1 Troubleshooting issues

ITEM	Cause	Solution
Unable to start the bar Feeder	No power	Check the power source
	In E-stop	Clear E-stop of barfeed and lathe.
The barfeed is in automatic but the barfeed will not feed	Feed stop signal is sent from lathe, no collet open signal is sent from lathe	Check interface.
Air alarm, cylinder will not actuate	Not enough air pressure	Increase air pressure

8.2 Troubleshooting frame

Situation	Cause	Solution
Material is unable to load on the magazine	Guide plates too low	Adjust the position of the plates

8.3 Troubleshooting pusher collet

Situation	Cause	Solution
Material is unable to be inserted into the collet.	The adjustment of the clamp device is not correct	Re-adjust
	The diameter of collet and material are different.	Change collet.
	The end of the material is too rough.	Chamfer before feeding material
	The air pressure is insufficient.	Check the pressure

8.4 Troubleshooting feeding mechanism

Situation	Cause	Solution
Material can't feed into the spindle smoothly	The center of the bar feeder and the lathe isn't correct	Realign barfeed
Material can't feed into the collet of the lathe smoothly	The front of the material is too rough.	Chamfer before feeding material

01

02

03

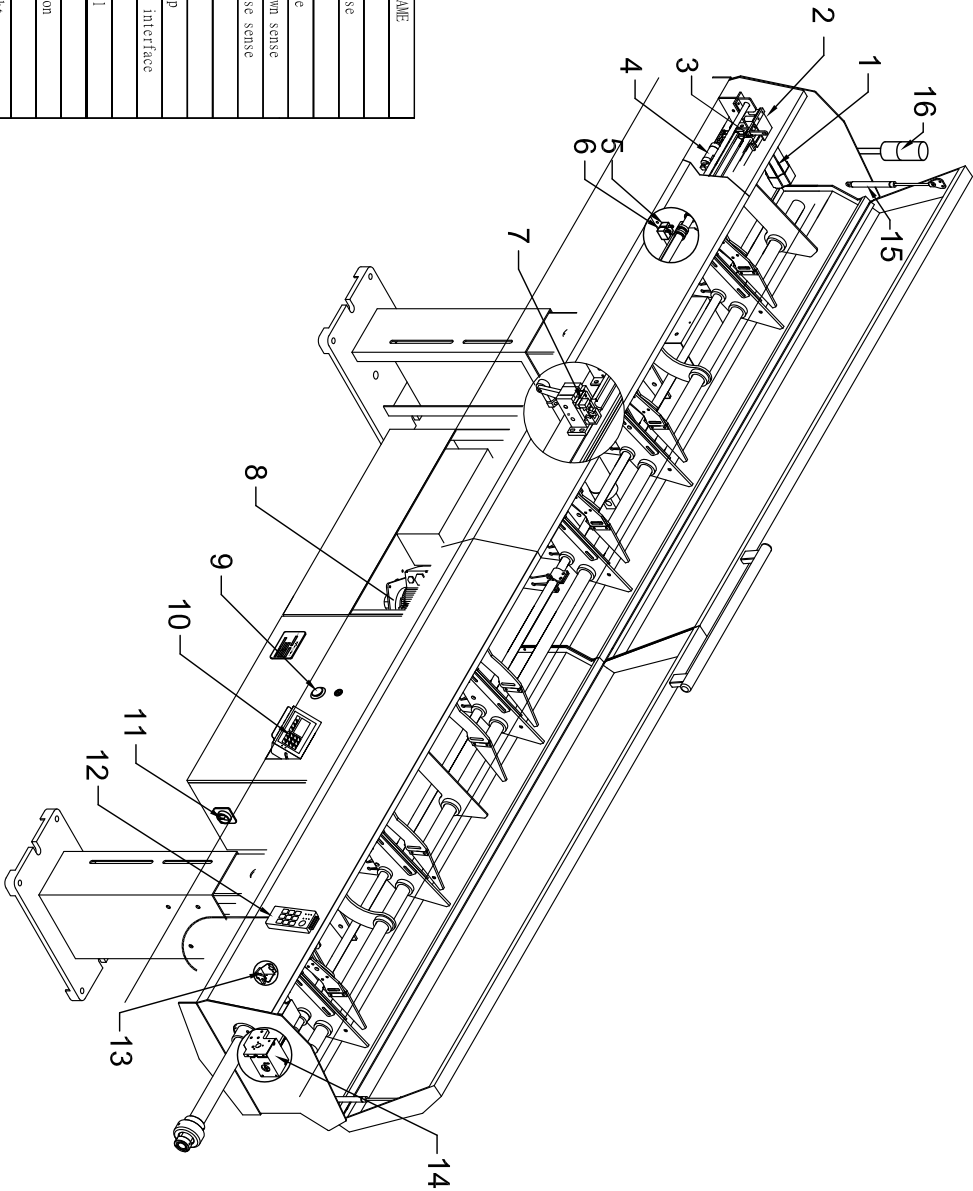
04

05

06

A4

NO.	PART NO.	CODE	NAME
1.	J221002	SM	Servo Motor
2.	J310413	LS2	Clamp one sense
3.	J310413	LS1	Origin sense
4.	A12140100	SRI	Clamp in sense
5.	J310409	LS4	Bar pusher down sense
6.	J310409	LS3	Bar pusher rise sense
7.	J310403	LS5	Clamp sense
8.	P76202000	M	Oil pump
9.	J310701	PBI	Emergency stop
10.	J310502	HMI	Human/machine interface
11.	J310502	CSI	Power switch
12.		RCB	Remote Control
13.	J310304	SR2	Cutting sense
14.	P43201000	CL	Synchronization
15.	J311801	LS6	Safety switch
16.	J630101	TL	Indicator light



D
BAR FEEDER TYPE
MM320/C320/C316

LATHE NAME

LATHE TYPE

01

02

03

04

05

06



FIRST DATE

2011 / 01 / 24

REVISION DATE

2012 / 11 / 27

MAIN VOLTAGE

220 VAC 3-PHASE

SIGNAL VOLTAGE

24VDC

PAGE

P. 01

DESCRIPTION

Machine electricity position

DRAWING NO.

JVEDGEHL-001EG

VERSION

C0

01

02

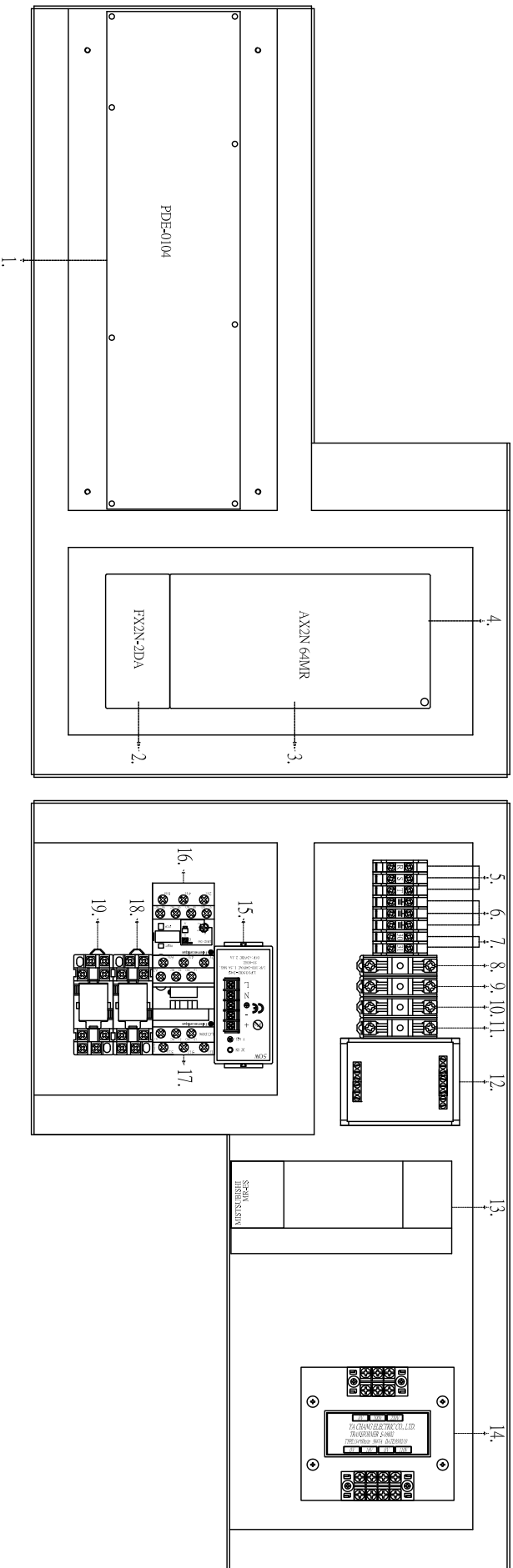
03

04

05

06

A4



B

A

NO.	PART NO.	CODE	NAME	NO.	PART NO.	CODE	NAME	NO.	PART NO.	CODE	NAME
1.	J151300	PCB1	Interface circuit board	10.	J1312000	F6	Fuse Socket	18.	J1310206	R7	Relay Socket
2.	J1220201	2DA	Analogy signal module	11.	J1620103	F4	Power Fuse	19.	J1310206		Relay
3.	J1210400	PLC	PROGRAMMABLE LOGIC CONTROLLER	12.	J1312000		Fuse Socket		J1310203	R8	Relay Socket
4.	J1210503	Cable	PLC to HMI cable	13.	J1620103		Power Fuse		J1310203		Relay
5.	J1610301	TB	3ø 220V terminal block	14.	J1220307	PCB2	Pulse change device				
6.	J1610301	TB	Earth terminal block	15.	J1221001	SERVO	Servo motor driver				
7.	J1610301	TB	Signal terminal block	16.	J12210051	CNI	Cable				
8.	J1312000		Fuse Socket	17.	J1110100	TR	Transformer				
9.	J1620102	F1	Power Fuse	18.	J1230101	Pr	Power supply				
	J1312000		Fuse Socket	19.	J1313100	O.L.	Over current relay				
	J1620103	F5	Power Fuse	20.	J1312702	MCI	Magnetic contactor				

C

D

MM320/C320/C316

LATHE NAME

LATHE TYPE



01

02

03

04

05

06

FIRST DATE 2011 / 01 / 24

REVISION DATE 2012 / 11 / 27

MAIN VOLTAGE 220 VAC 3-PHASE

SIGNAL VOLTAGE 24VDC

PAGE P. 02

DRAWN BY

CHECKED BY

DESCRIPTION

DISTRIBUTION OF Electric parts

Blue

DRAWING NO.

JVEDGEHL-002TC

VERSION C0

01

02

03

04

05

06

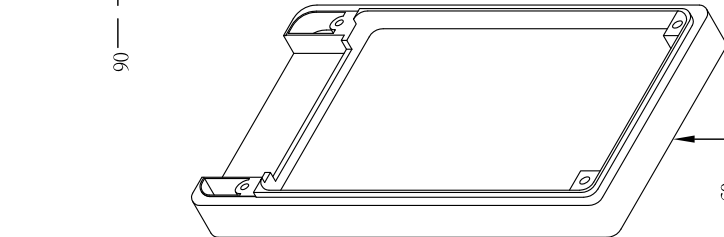
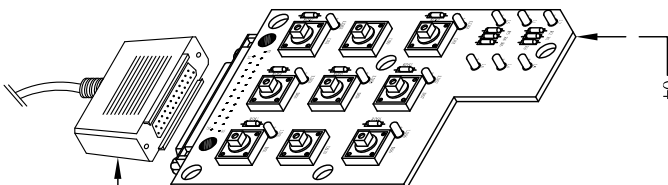
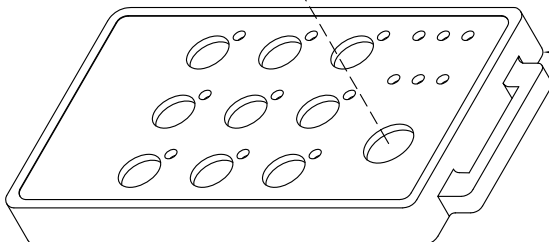
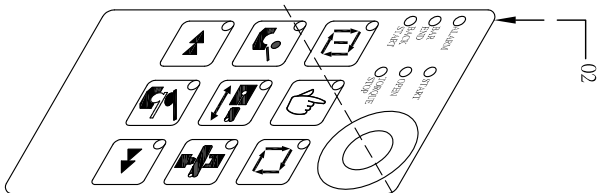
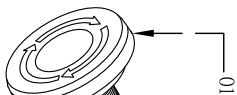
A4

A

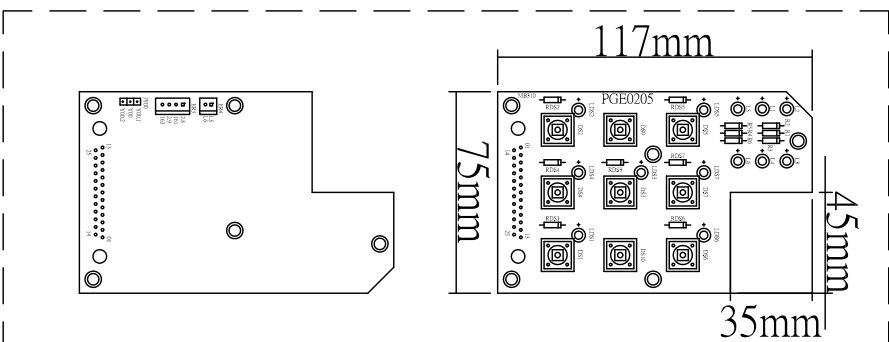
B

C

NO.	PART NO.	CODE	NAME
01	J310702	ES2	Emergency / PP2
02	P33200401		Paster
03	G91120500		Top
04	J5111300	MRCB	PCB3 / PGB0205
05	G91120600		Bottom
06	J420600		Cable



06



D

MM320/C320/C316

LATHE NAME

LATHE TYPE

01

02

03

04

05

06



FIRST DATE

2011 / 01 / 24

REVISION DATE

2012 / 11 / 27

MAIN VOLTAGE

220 VAC 3-PHASE

SIGNAL VOLTAGE

24VDC

PAGE

P. 03

DRAWN BY

Blue

CHECKED BY

DESCRIPTION

Decomposition of remote control pendant

DRAWING NO.

G91120011-EG

VERSION

C0

01		02		03		04		05		06		A4
A												A
(PV1) └─ 01 └─ 03 └─ 05 └─ 06 └─ 07 └─ 08 └─ 09 └─ 10 VAL1 VAL3 VAL5 VAL6 VAL9 VAL7 VAL8 VAL11 Y10 Y12 Y14 Y15 Y22 Y20 Y21 Y24 (PV2) └─ 11 VAL10 Y17												A
B												B
C												C
D												D
NO. PART NO. CODE NAME												
01 AI2120200 VAL1 Bar pusher rise												
02 VAL2 Bar pusher down												
03 AI2120200 VAL3 Clamping in												
04 VAL4 Clamping out												
05 AI2120100 VAL5 Clamping												
06 AI2120100 VAL6 Loading												
07 AI2120100 VAL9 3rd anti-vibration												
08 AI2120100 VAL7 2nd anti-vibration												
09 AI2120100 VAL8 1st anti-vibration												
10 AI2120100 VAL11 4th anti-vibration (OPTION)												
11 AI2120100 VAL10 Movable anti-vibration												
B&P FEEDER TYPE												
MM320/C320/C316												
LATHE NAME												
LATHE TYPE												
01												
02												
03												
04												
05												
06												
EDGE TECHNOLOGIES												
A DIVISION OF HYDROMAT INC												
FIRST DATE												
2011 / 01 / 24												
REVISION DATE												
2012 / 11 / 27												
MAIN VOLTAGE												
220 VAC 3-PHASE												
SIGNAL VOLTAGE												
24VDC												
PAGE												
P. 04												
DRAWING NO.												
JVEDGEHL-005EG												
VERSION												
C0												
Blue												
DRAWN BY												
CHECKED BY												
DESCRIPTION												
Solenoid valves position												

01

02

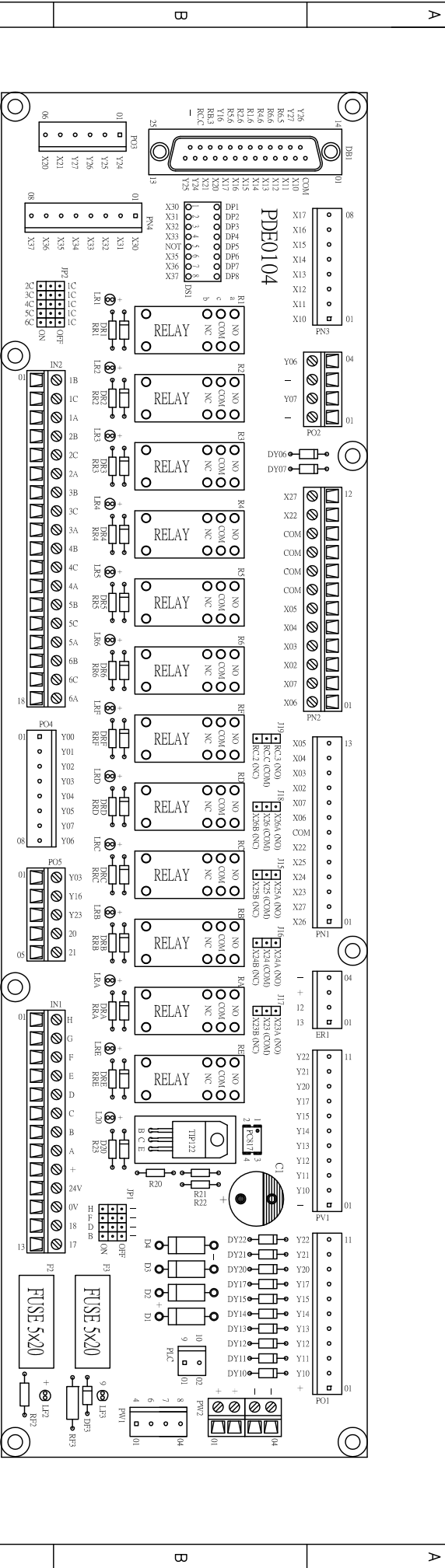
03

04

05

06

A4



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

D		B		A	
B&P FEEDER TYPE		MM320/C320/C316			
LATHE NAME					
LATHE TYPE					



D		B		A	
FIRST DATE		2011 / 01 / 24			
REVISION DATE		2012 / 11 / 27			
DRAWN BY		Blue			
CHECKED BY					
MAIN VOLTAGE		220 VAC 3-PHASE			
SIGNAL VOLTAGE		24VDC			
DESCRIPTION		Main PC board			
DRAWING NO.		JVEDGEHL-401EG			
VERSION		C0			

01

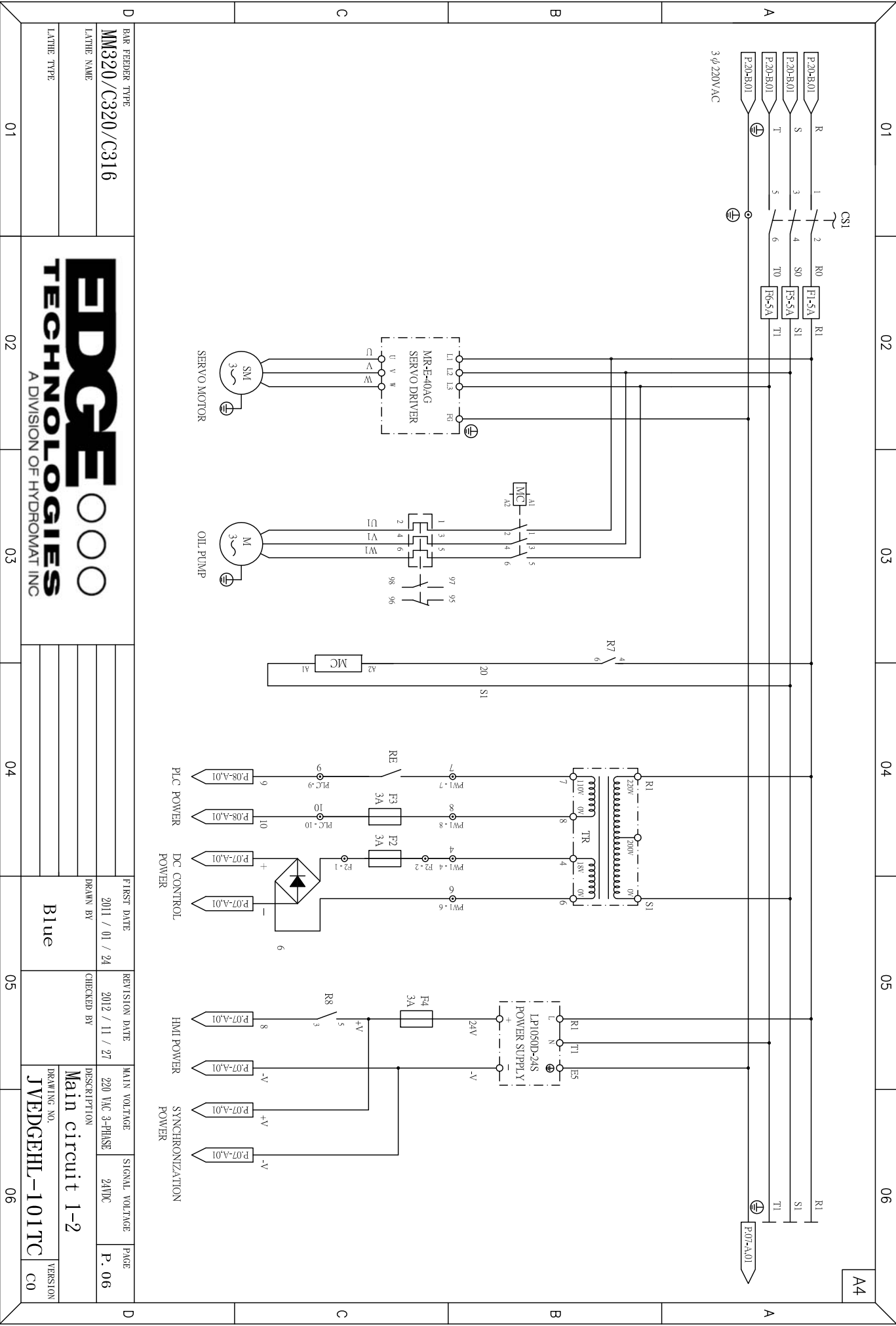
02

03

04

05

06



01

02

03

04

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06

A4

BAR FEEDER TYPE
MM320/C320/C316

LATHE NAME

LATHE TYPE

01

02

03

04

05

06



FIRST DATE
2011 / 01 / 24

REVISION DATE
2012 / 11 / 27

MAIN VOLTAGE
220 VAC 3-PHASE

SIGNAL VOLTAGE
24VDC

PAGE
P. 06

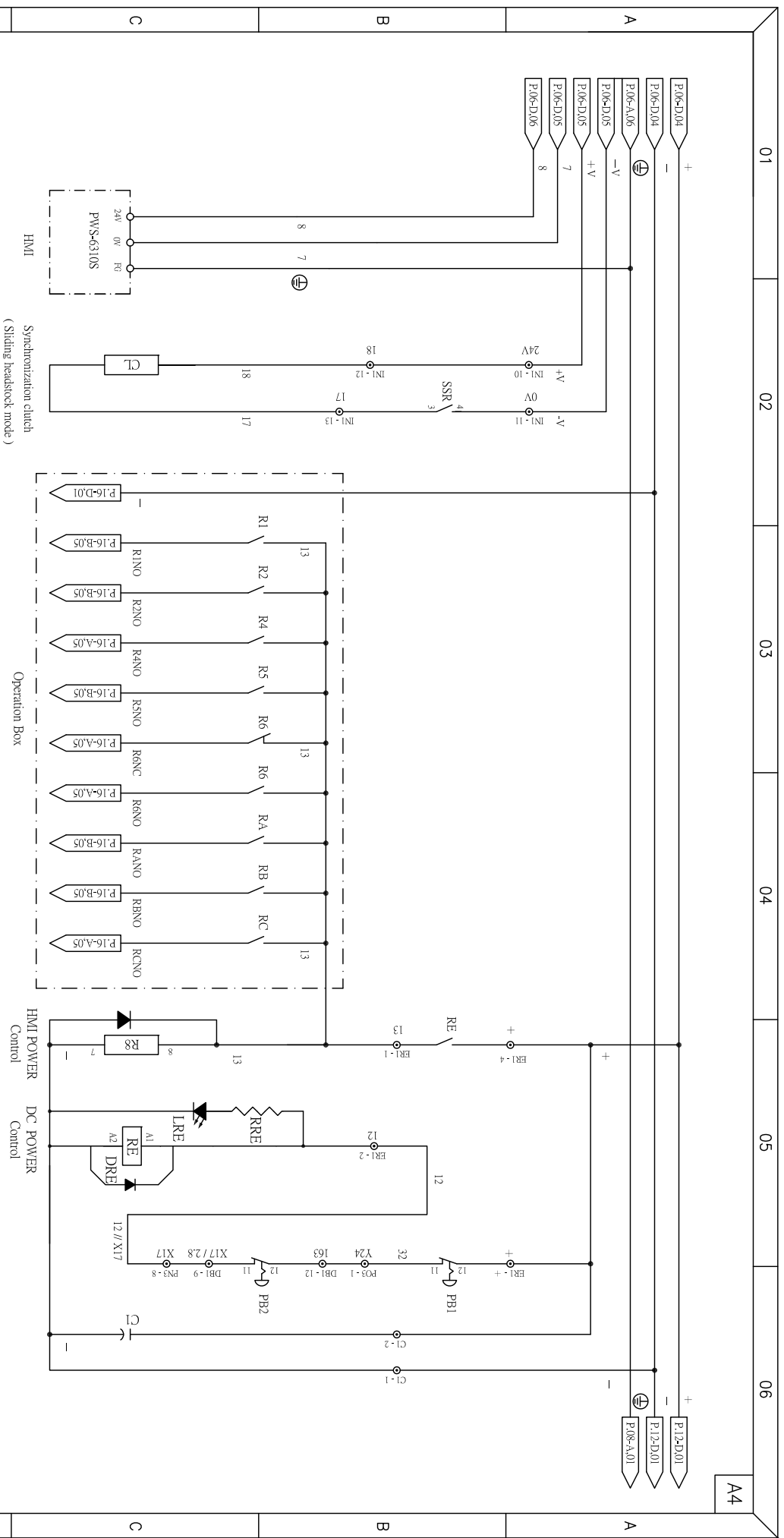
DRAWN BY
Blue

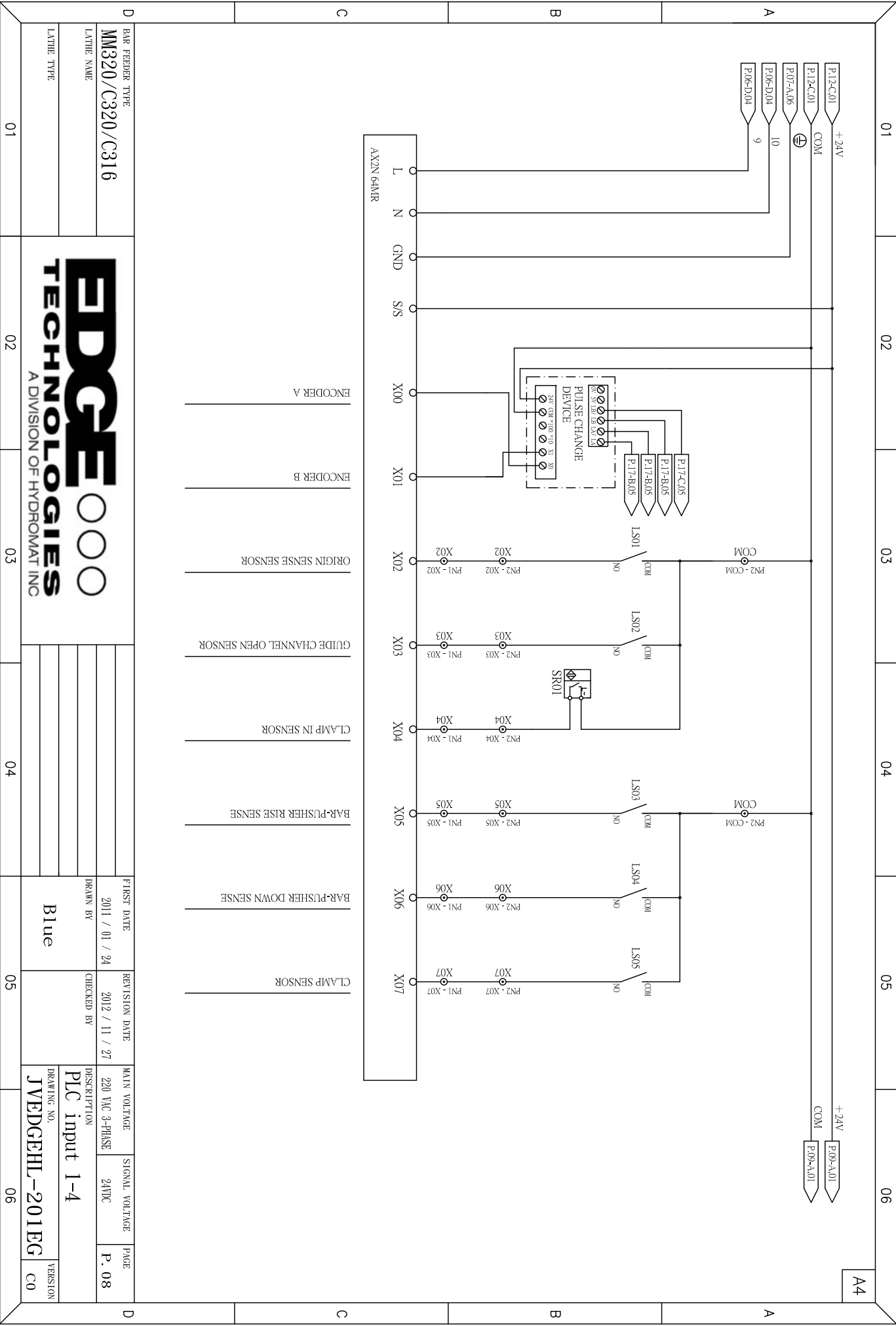
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DESCRIPTION
Main circuit 1-2

DRAWING NO.
JVEDGEHL-101TC

VERSION
C0





BAR FEEDER TYPE		FIRST DATE		REVISION DATE		MAIN VOLTAGE		SIGNAL VOLTAGE		PAGE	
MM320/C320/C316		2011 / 01 / 24		2012 / 11 / 27		220 VAC 3-PHASE		24VDC		P. 08	
LATHE NAME		DRAWN BY		CHECKED BY		DESCRIPTION		PLC input 1-4		VERSION	
LATHE TYPE		Blue				DRAWING NO.		JVEDGEHL-201EG		C0	



01

02

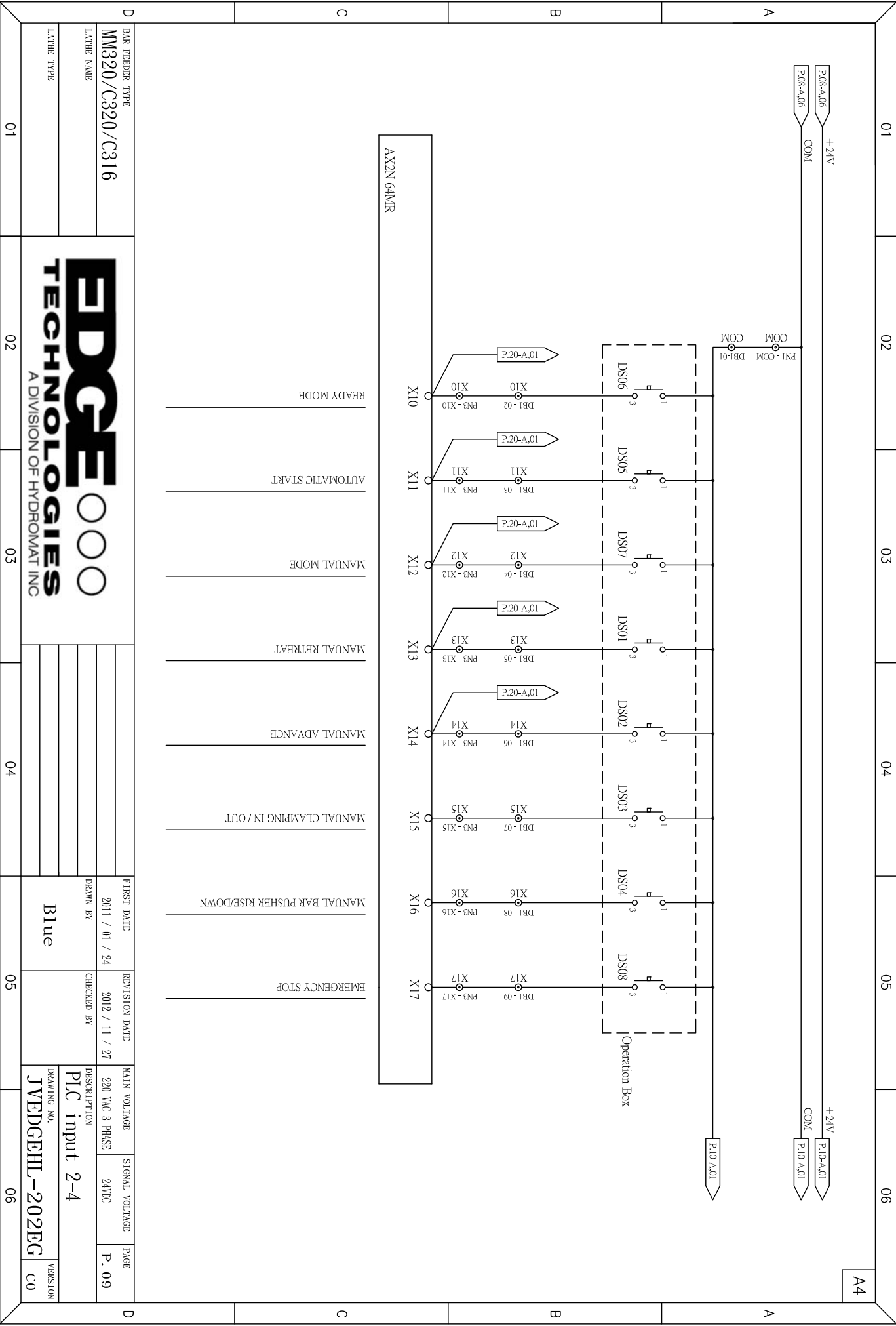
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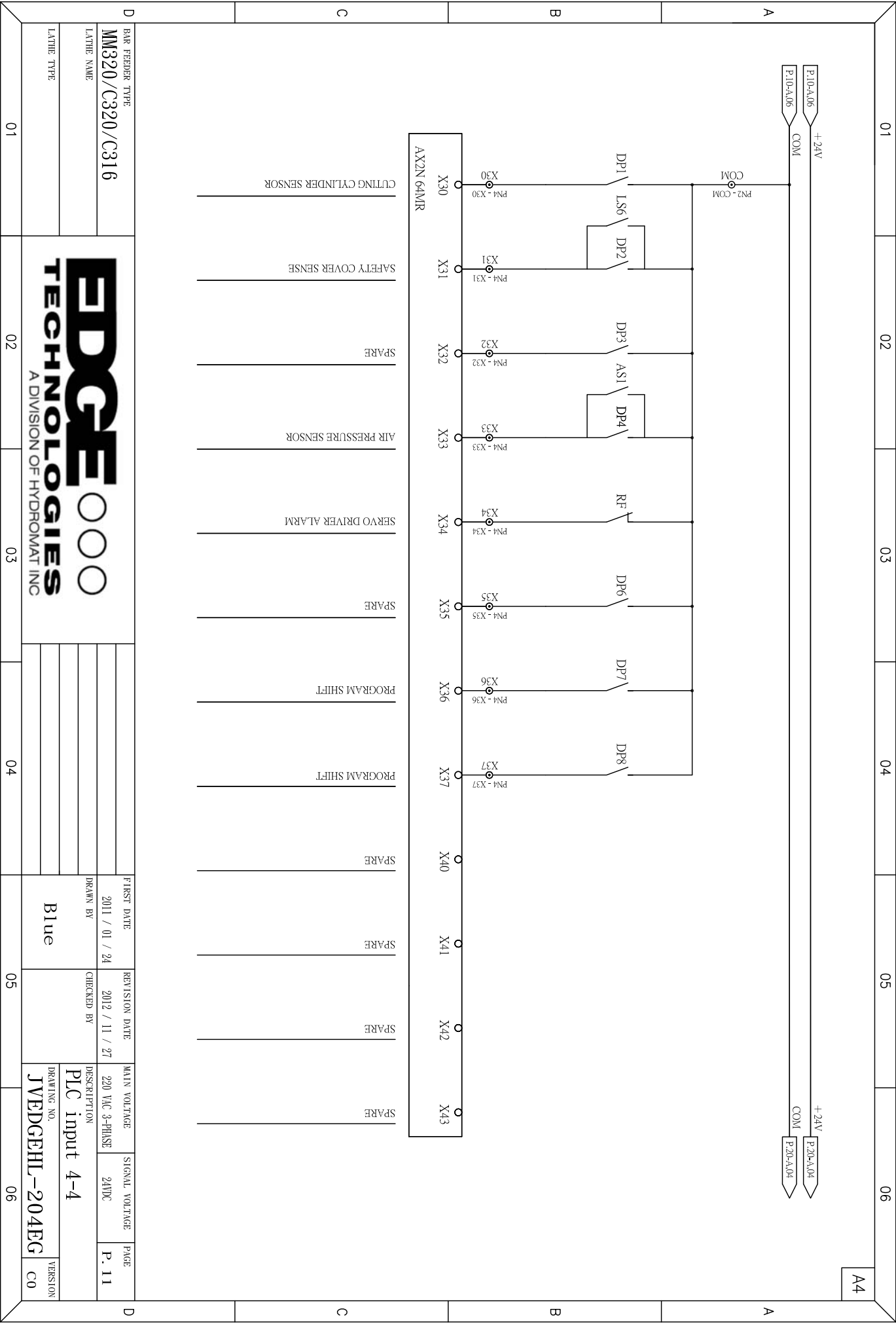
04

05

06

A4





B

DP1

LS6

DP2

DP3

AS1

DP4

RF

DP6

DP7

DP8

X30

X31

X32

X33

X34

X35

X36

X37

X40

X41

X42

X43

AX2N 64MR

C

CUTTING CYLINDER SENSOR

SAFETY COVER SENSE

SPARE

AIR PRESSURE SENSOR

SERVO DRIVER ALARM

SPARE

PROGRAM SHIFT

PROGRAM SHIFT

SPARE

SPARE

SPARE

SPARE

D

B&B FEEDER TYPE

MM320/C320/C316

LATHE NAME

LATHE TYPE

EDGE

TECHNOLOGIES

A DIVISION OF HYDROMAT INC

FIRST DATE

2011 / 01 / 24

REVISION DATE

2012 / 11 / 27

MAIN VOLTAGE

220 VAC 3-PHASE

SIGNAL VOLTAGE

24VDC

PAGE

P. 11

DRAWN BY

Blue

CHECKED BY

PLC input 4-4

DRAWING NO.

JVEDGEHL-204EG

VERSION

C0

01

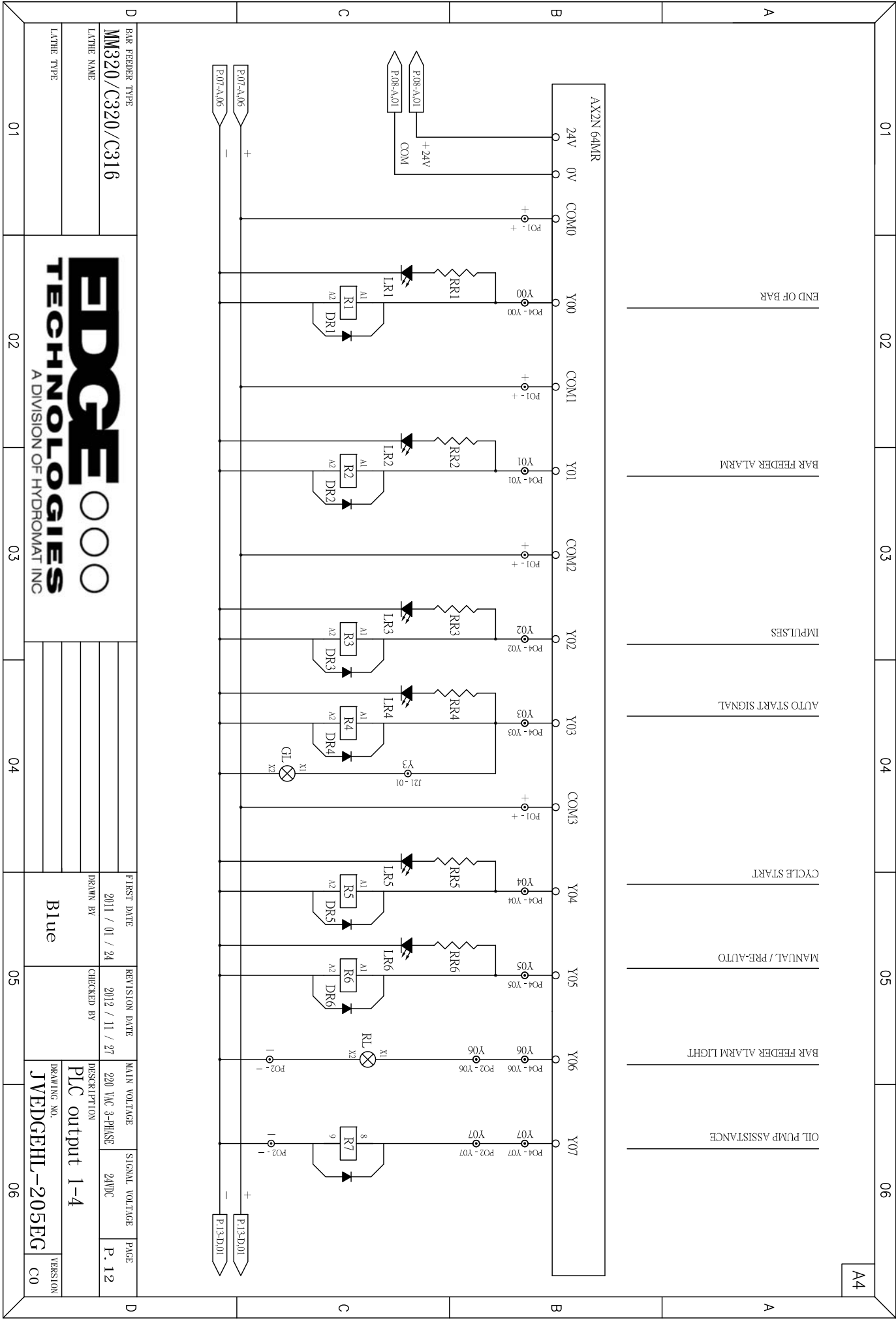
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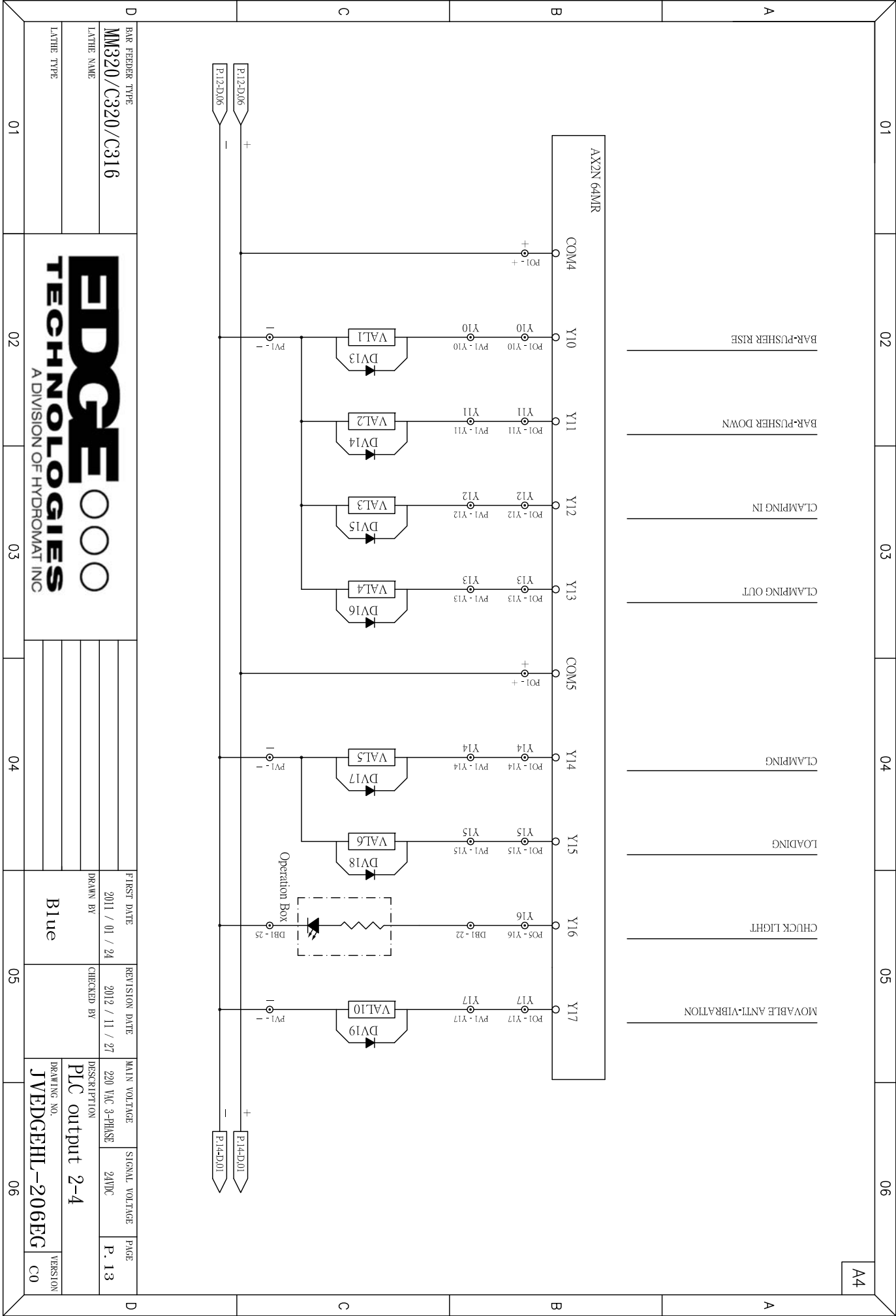
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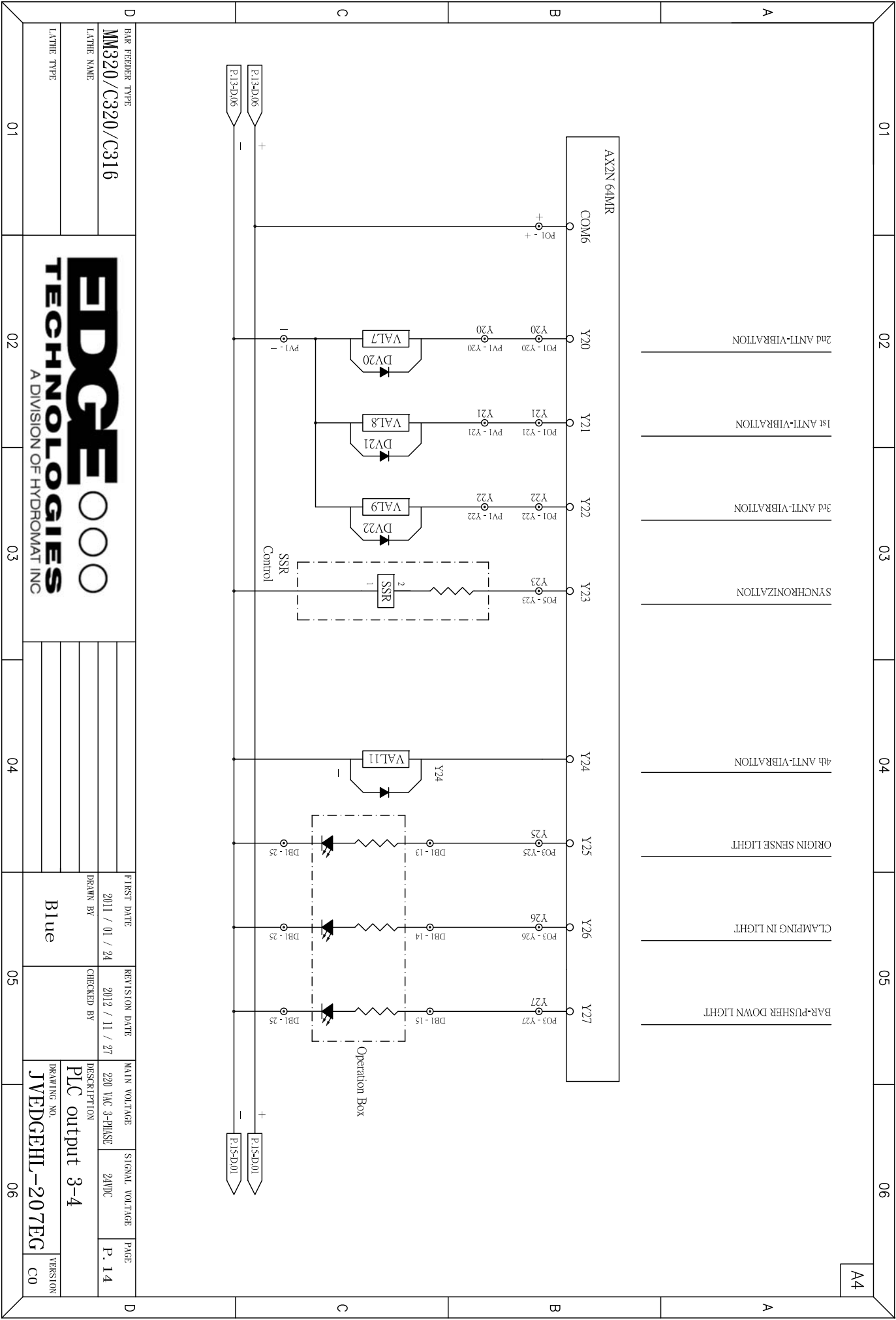
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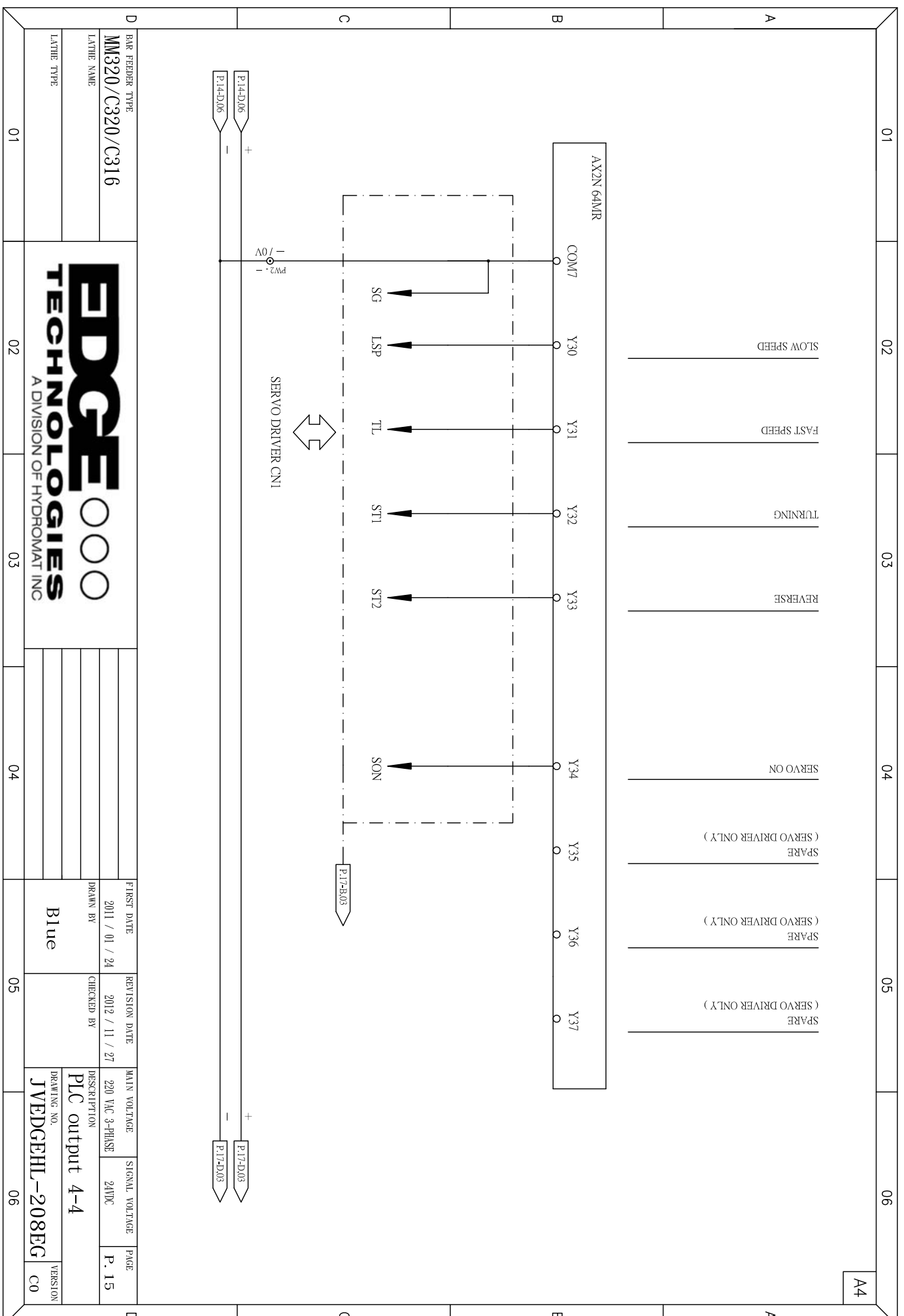
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06









01

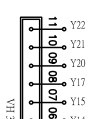
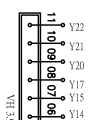
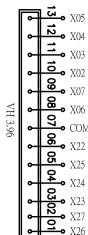
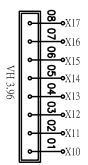
02

03

04

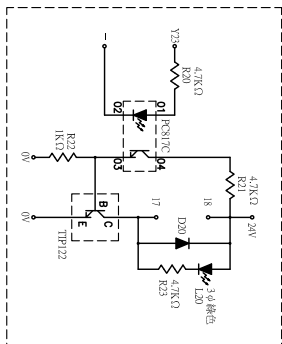
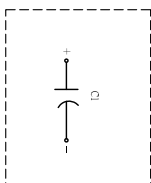
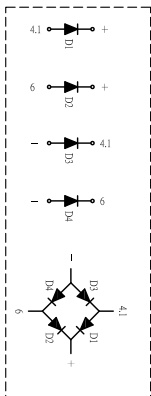
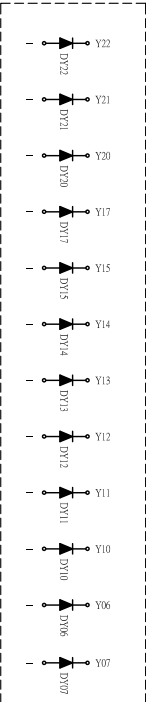
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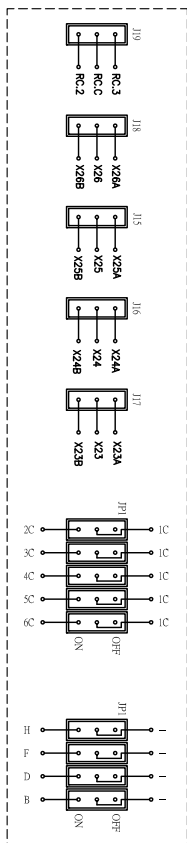
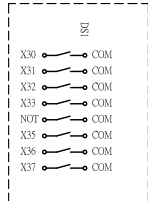
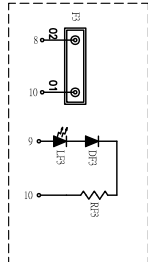


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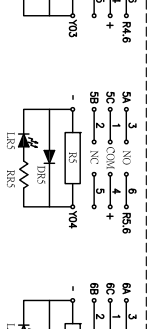
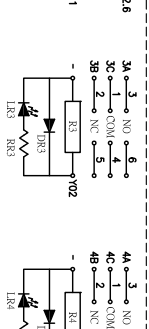
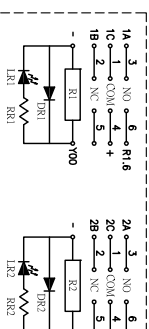
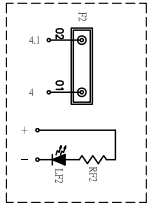


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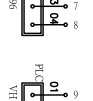
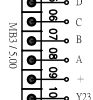
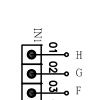
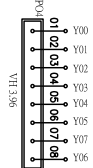
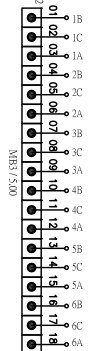
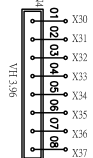
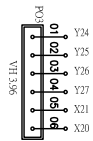


B

C



C



D BAR FEEDER TYPE

MM320/C320/C316

LATHE NAME

LATHE TYPE

01

02

03

04

05

06



FIRST DATE

REVISION DATE

MAIN VOLTAGE

SIGNAL VOLTAGE

PAGE

DRAWN BY

CHECKED BY

DESCRIPTION

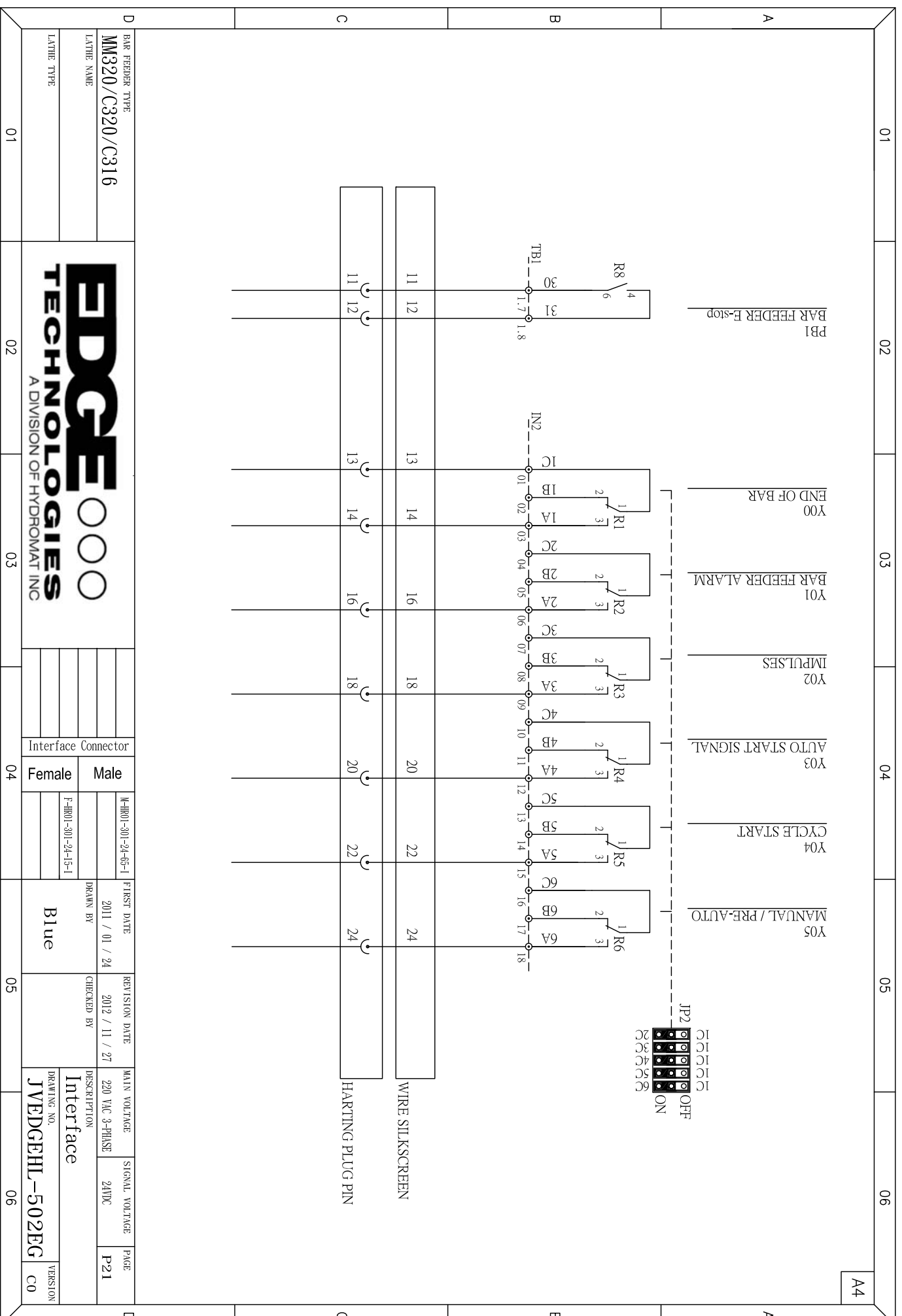
DRAWING NO.

VERSION

Blue

Main PC board circuit
JVEDGEHL-402EG
C0

[illegible]



REV	LOCATION	DESCRIPTION	DATE	INITIALS
-	-	-	-	-

APPLICABLE LATHES MODELS	1	2	3	4	5	6	7	8	9	10

EXTRA ELECTRICAL COMPONENTS - SPECIAL NOTES:	
NOTE: TO ADJUST SIGNAL FORM LATHE FROM N/O TO N/C MOVE THE JUMPER ON THE CORRESPONDING "J" TERMINAL	
USE HARTING TYPE SINGLE SIDE LATCH HOOD W/24 PIN MALE INSERT	

MAIN VOLTAGE:	
230 VAC 3-PHASE	
SIGNAL VOLTAGE:	
24V DC	
THIRD ANGLE PROJECTION	
TOLERANCES: METRIC (EXCEPT AS NOTED)	
X ± 0.5	ANGULAR ± 1/2°
XX ± 0.1	BREAK SHARP EDGES 0.2
DRAWN BY: D.FELTZ	
CHKD BY: E.EDMM320.77.01A	
SCALE: 1:1	
DATE: 02-25-11	
REV	

STAR LATHE MINITEMAN 320 INTERFACE	
------------------------------------	--

REV	LOCATION	DESCRIPTION	DATE	INITIALS
-	-	-	-	-

WIRE SILKSCREEN

HARDING PLUG PIN

JP2

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

OFF ON

Y05 MANUAL / PRE-AUTO

Y04 CYCLE START

Y03 AUTO START SIGNAL

Y02 IMPULSES

Y01 BAR FEEDER ALARM

Y00 END OF BAR

PB1 BAR FEEDER E-stop

R8 4 6

R8 4 6

R8 4 6

R1 1 2 3

R2 1 2 3

R3 1 2 3

R4 1 2 3

R5 1 2 3

R6 1 2 3

IN2

IC 01 02 03

1B 1 2 3

1A 1 2 3

2C 04 05 06

2B 1 2 3

2A 1 2 3

3C 07 08 09

3B 1 2 3

3A 1 2 3

4C 10 11 12

4B 1 2 3

4A 1 2 3

5C 13 14 15

5B 1 2 3

5A 1 2 3

6C 16 17 18

6B 1 2 3

6A 1 2 3

TB1 1.7 1.8 1.9 1.10

32

33

30

31

10 7 24

9 22

8 20

11 21

STAR LATHE

MINUTEMAN 320 INTERFACE

EXTRA ELECTRICAL COMPONENTS - SPECIAL NOTES:

NOTE: TO ADJUST SIGNAL FORM LATHE FROM N/O TO N/C MOVE THE JUMPER ON THE CORRESPONDING "J" TERMINAL

USE HARTING TYPE SINGLE SIDE LATCH HOOD W/24 PIN MALE INSERT

MAIN VOLTAGE:

230 VAC 3-PHASE

SIGNAL VOLTAGE:

24V DC

THIRD ANGLE PROJECTION

TOLERANCES METRIC (EXCEPT AS NOTED)

X ± 0.5

X ± 0.25

XX ± 0.1

ANGULAR ± 1/2°

BREAK SHARP EDGES 0.2

DRAWN BY D.FELTZ

CHK'D BY

SCALE: 1:1

DATE: 02-25-11

DRAWING NO.

REV

E:EDMM320.71.01B

REV

1

2

3

4

5

6

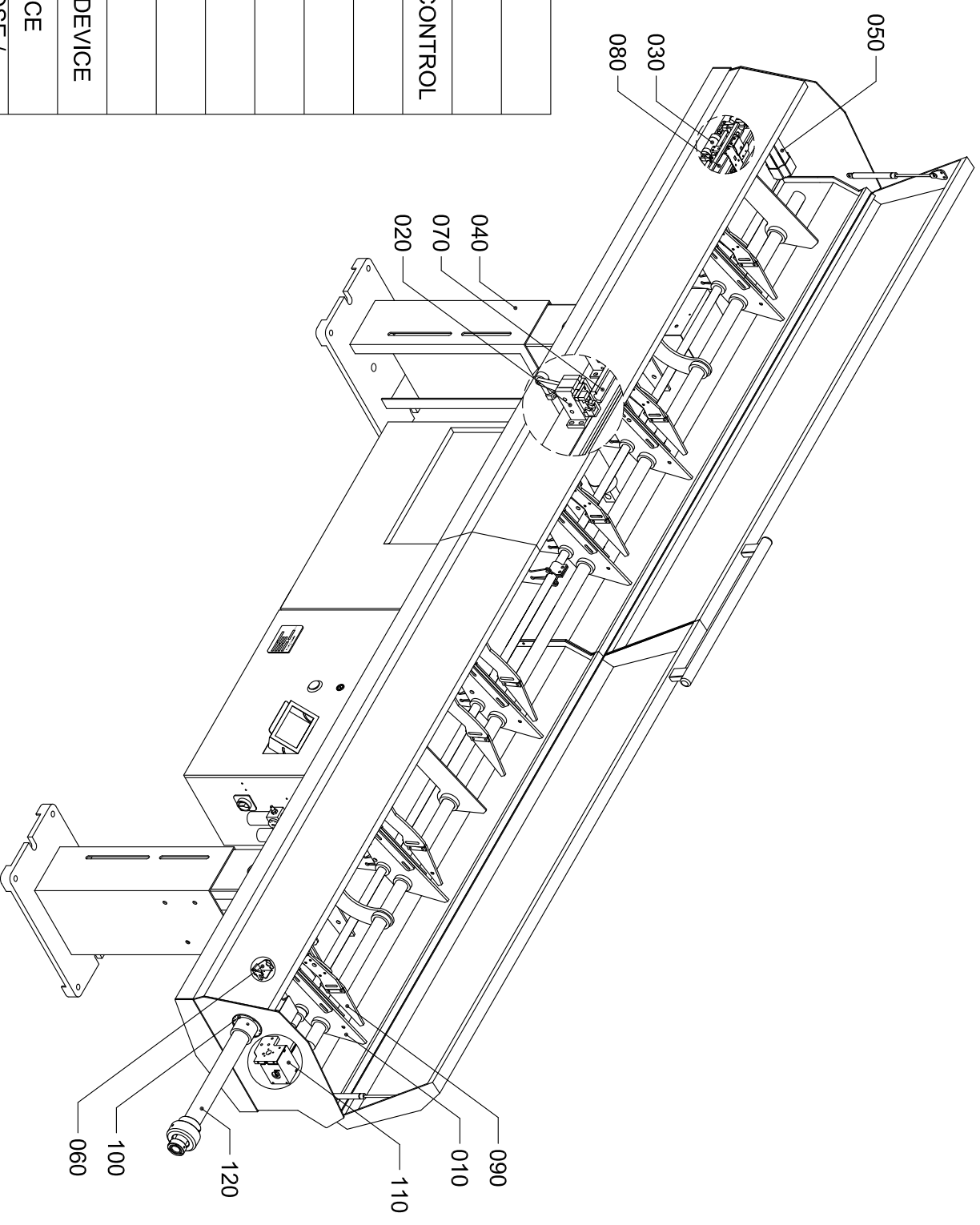
7

8

9

10

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

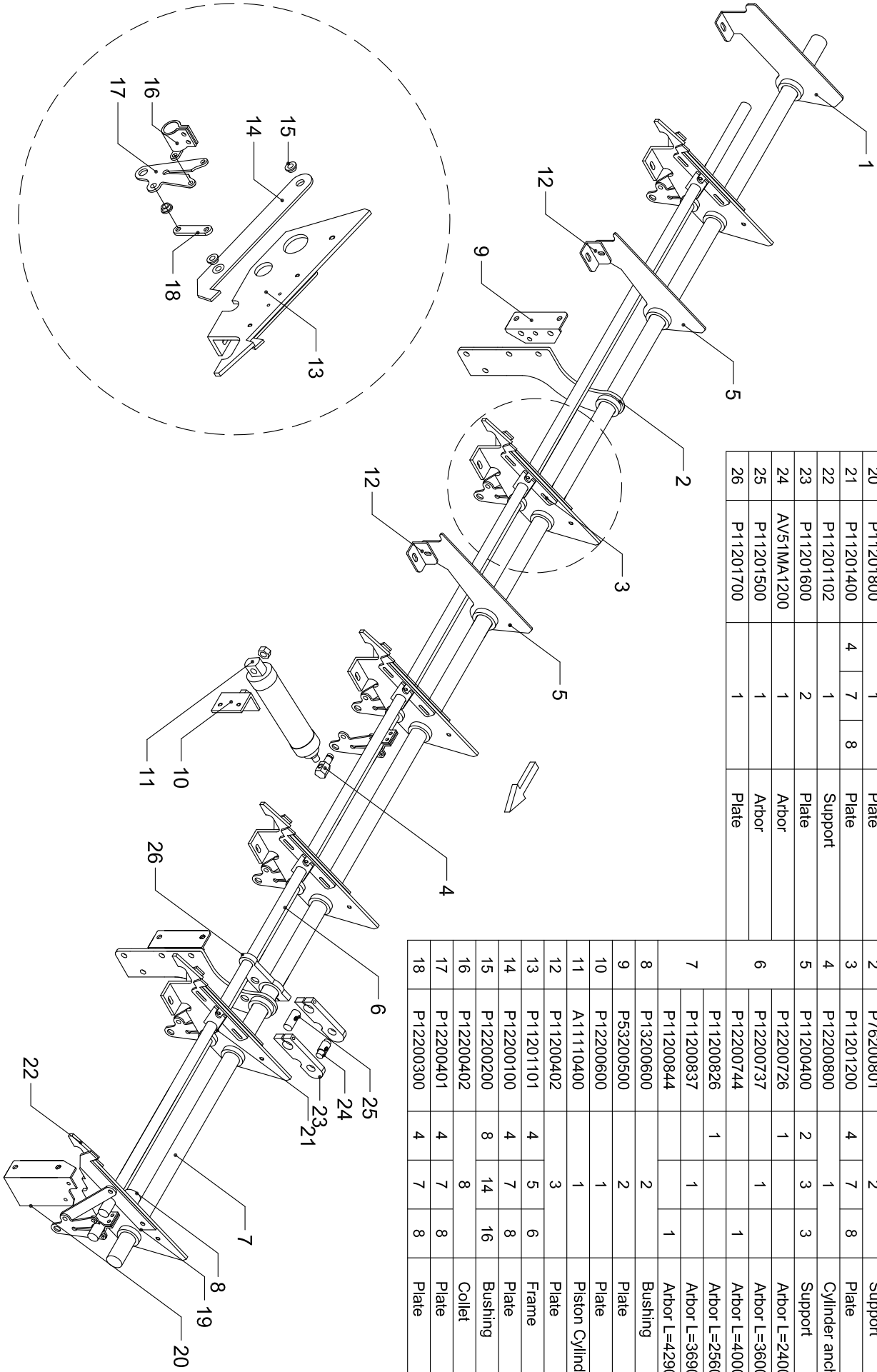


MM-Series

PICTURE INDEX

N.	Code	QTY			Denomination	N.	Code	QTY			Denomination
		22	37	44				22	37	44	
19	P11201300	1			Bushing	1	P11200310	1			Support
20	P11201800	1			Plate	2	P76200801	2			Support
21	P11201400	4	7	8	Plate	3	P11201200	4	7	8	Plate
22	P11201102	1			Support	4	P12200800	1			Cylinder anchor
23	P11201600	2			Plate	5	P11200400	2	3	3	Support
24	AV51MA1200	1			Arbor	6	P12200726	1			Arbor L=2400
25	P11201500	1			Arbor		P12200737		1		Arbor L=3600
26	P11201700	1			Plate		P12200744			1	Arbor L=4000

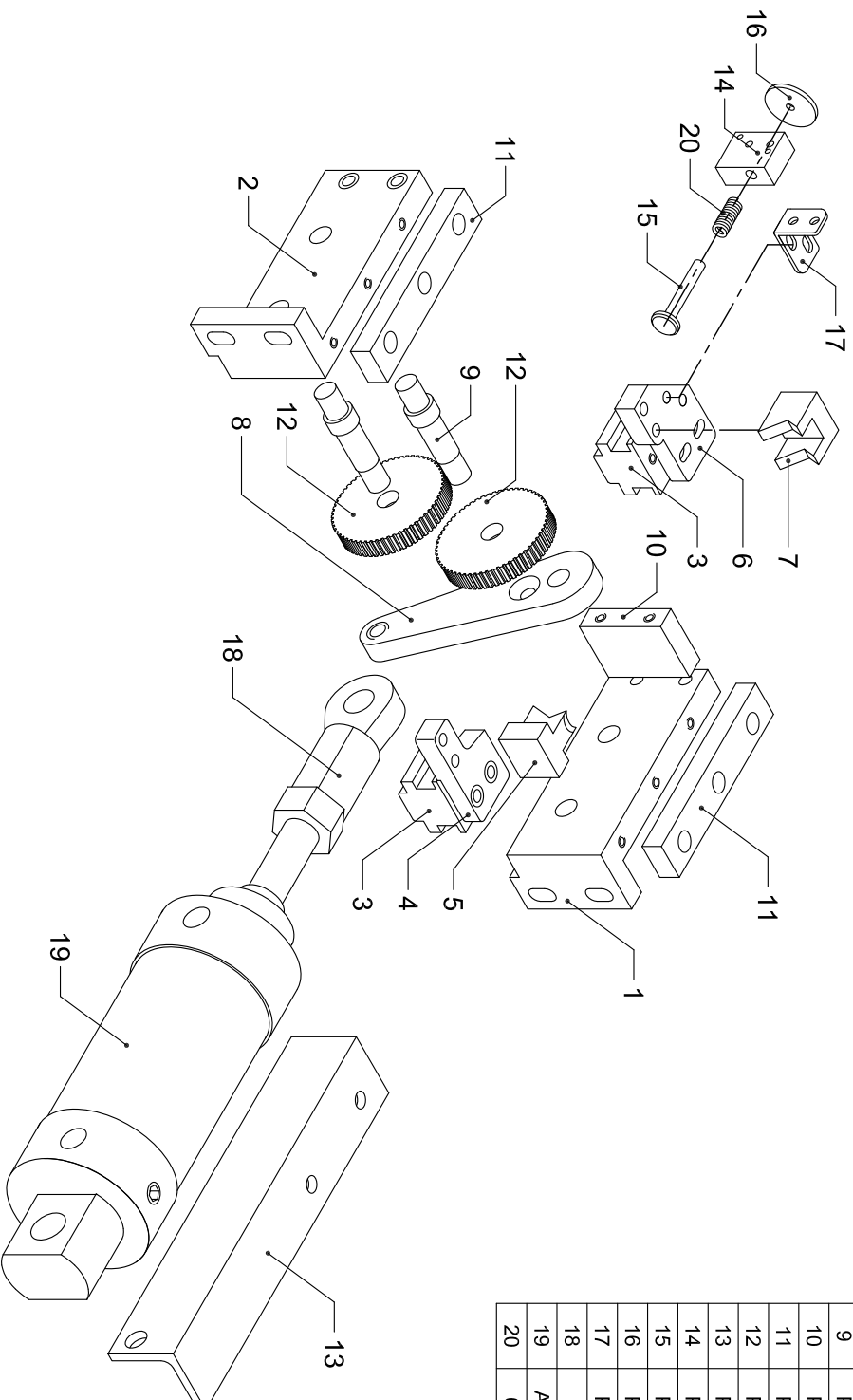
7	P11200826	1			Arbor L=2560mm
	P11200837		1		Arbor L=3690mm
	P11200844			1	Arbor L=4290mm
8	P13200600	2			Bushing
9	P53200500	2			Plate
10	P12200600		1		Plate
11	A11110400		1		Piston Cylinder
12	P11200402	3			Plate
13	P11201101	4	5	6	Frame
14	P12200100	4	7	8	Plate
15	P12200200	8	14	16	Bushing
16	P12200402	8			Collet
17	P12200401	4	7	8	Plate
18	P12200300	4	7	8	Plate



MM-Series

FRAME DEVICE

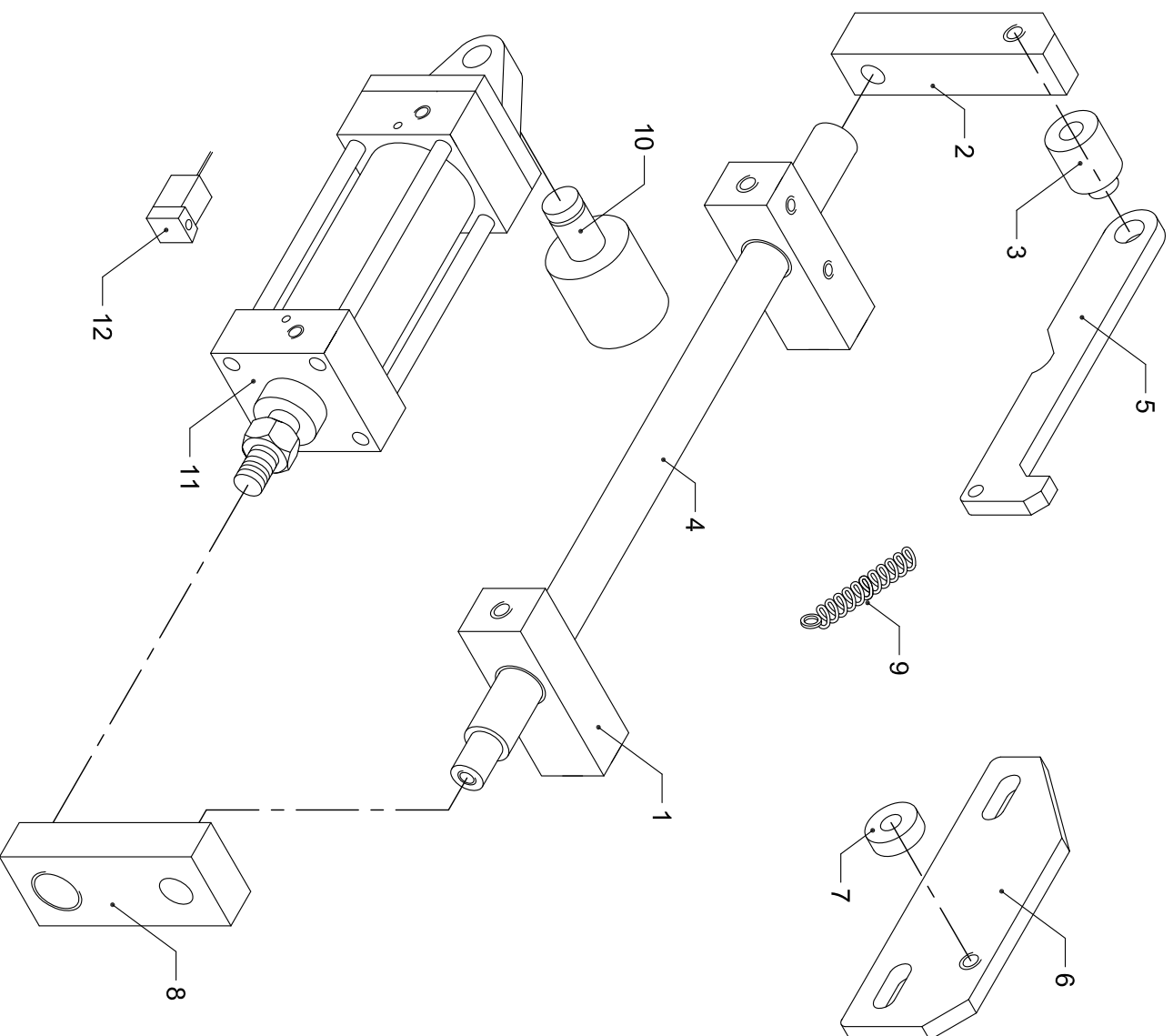
N.	Code	QTY	Denomination
1	P21200100	1	Support
2	P21200101	1	Support
3	P21200200	2	Anchor
4	P21200300	1	Plate
5	P21200401	1	Seal(A)
6	P21200500	1	Plate
7	P21200601	1	Seal(B)
8	P21200700	1	Support
9	P21200800	2	Arbor
10	P21200900	1	Anchor
11	P21201000	2	Anchor
12	P21201100	2	Spur gear
13	P21201200	1	Plate
14	P21201500	1	Anchor
15	P21201600	1	Arbor
16	P21201700	1	Plate
17	P21201800	1	Plate
18	BPHS12	1	Joint
19	A111110601	1	Cylinder MAL-CA-40x75
20	607310600	1	Spring



MM-Series

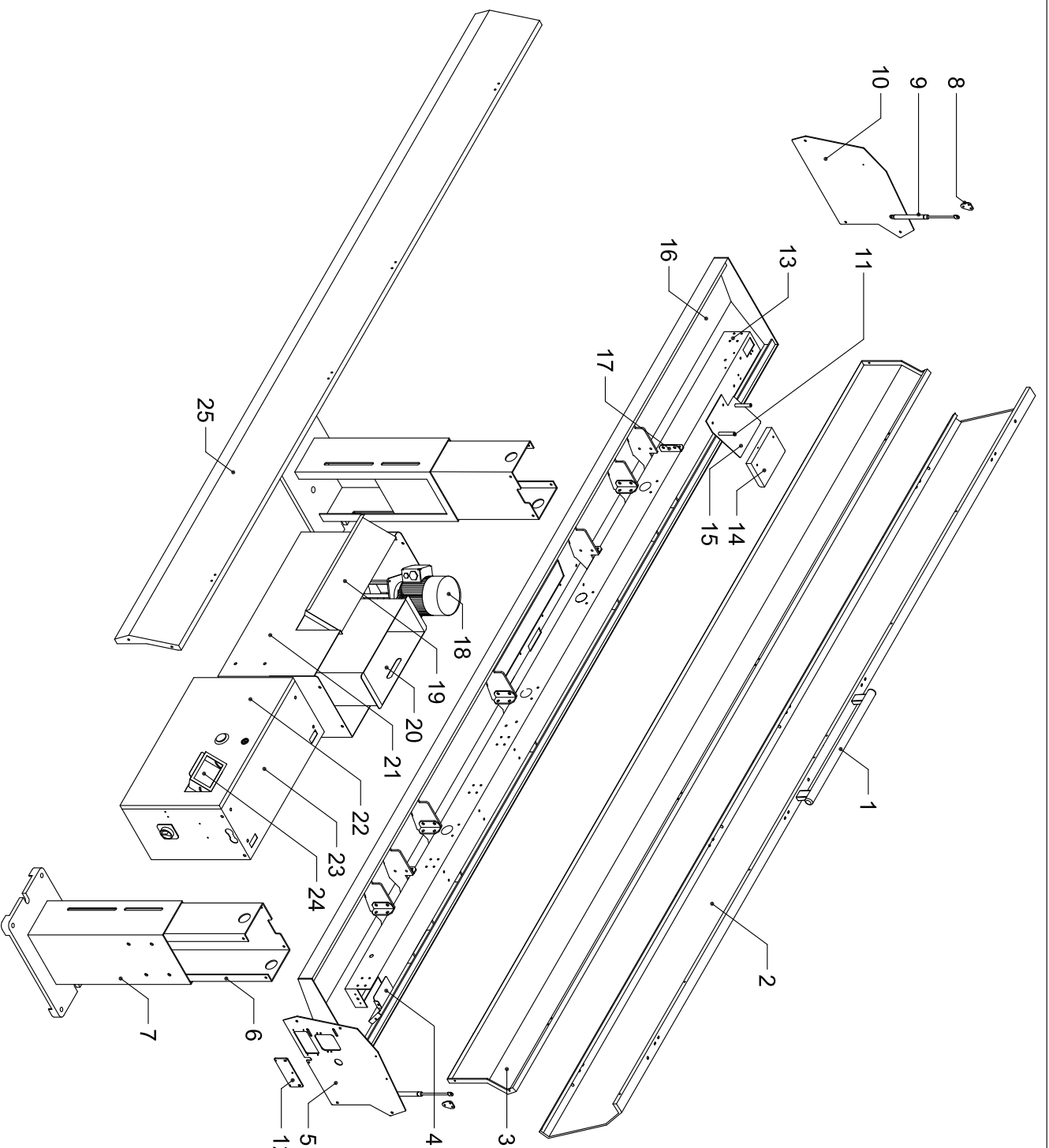
CLAMP

N.	Code	QTY	Denomination
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2	P22200201	1	Anchor
3	P22201700	1	Bushing
4	P22200400	1	Arbor
5	P22201500	1	Plate
6	P22201600	1	Plate
7	B 696 ZZ	2	Bearing 696ZZ
8	P22200800	1	Anchor
9	G52121100	1	Spring
10	P22201400	1	Support
11	A11150200	1	Piston cylinder SC-50/65-SCA
12	A12140100	1	Sensor CS1-U



MM-Series

LOADING-UNLOADING CONTROL



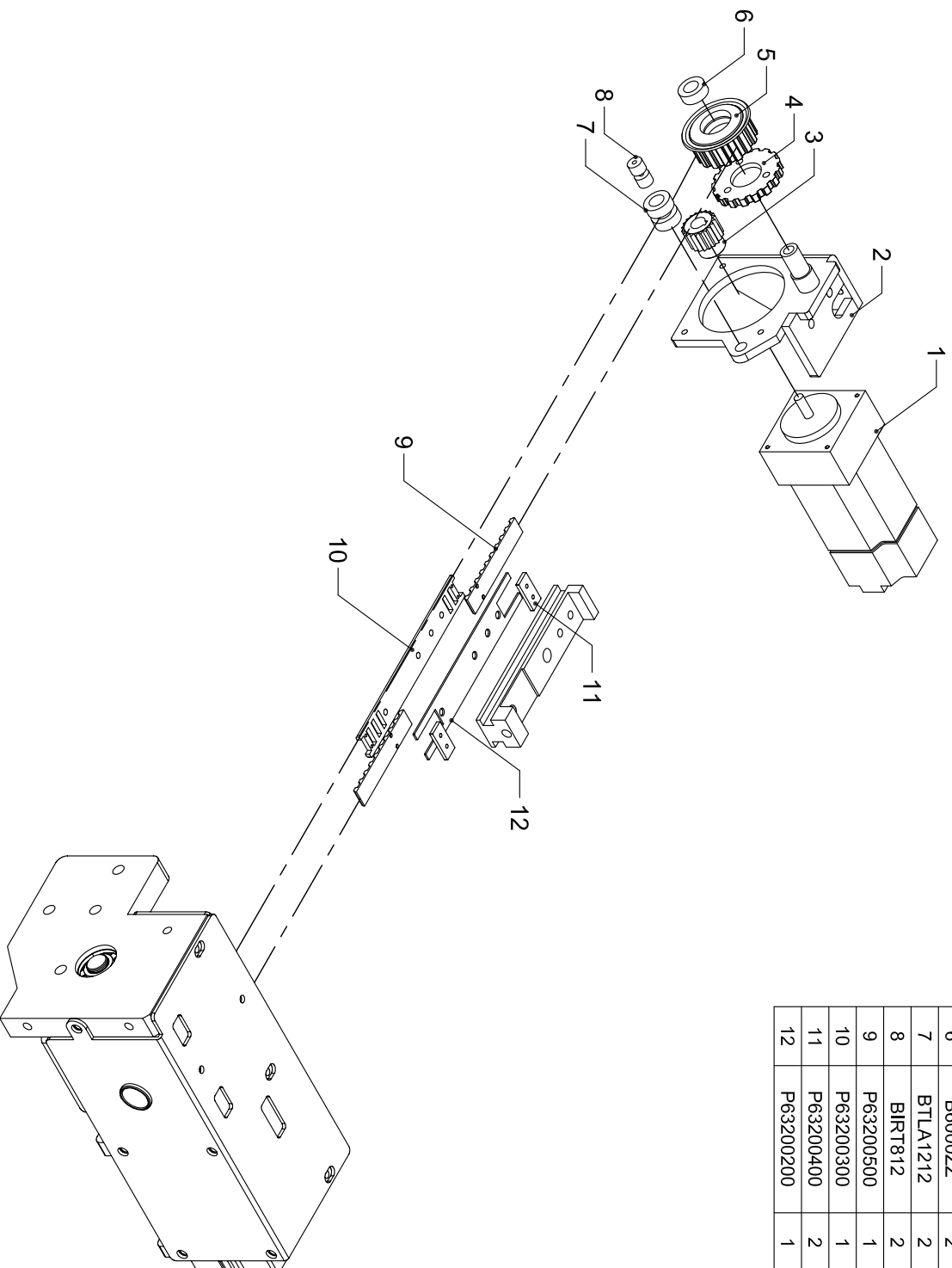
N.	Code	QTY	Denomination
1	P76201900	1	Handle
	P76201422	1	Cover L=2810 22#
	P76201439	1	Cover L=4344 37#
2	P76201444	2	Cover L=2472 44#
	P76201322	1	Cover L=2820 22#
	P76201339	1	Cover L=4350 37#
3	P76201344	1	Cover L=4950 44#
4	P76202100	1	Cover
5	P76201002	1	Plate
6	P76200100	2	Stand
7	P76200200	2	Stand
8	P76201600	2	Plate
9	P76201801	2	Shaft GF06-269-120
10	P76201100	1	Plate
11	P76202400	2	Screw
12	P76201003	1	Plate
	P79200222	1	Beam L=2776
13	P79200237	1	Beam L=4306
	P79200244	1	Beam L=4906
14	P76202300	1	Cover
15	P76202200	1	Plate
	P76200322	1	Dislot L=2842 22#
16	P76200338	1	Dislot L=4372 37#
	P76200344	1	Dislot L=4972 44#
17	P76200900	2	Plate
18	P76202000	1	Pump
19	P76200401	2	Cover
20	P76200500	1	Remnant tank
21	P76200400	1	Oil tank
22	P76200604	2	Cover
23	P76200602	1	Control box
24	P76200601	1	Housing
	P76201222	1	Cover L=2820 22#
	P76201239	1	Cover L=4350 37#
25	P76201244	1	Cover L=4950 44#

MM-Series

BASES AND BEAM

Tab.
041 2

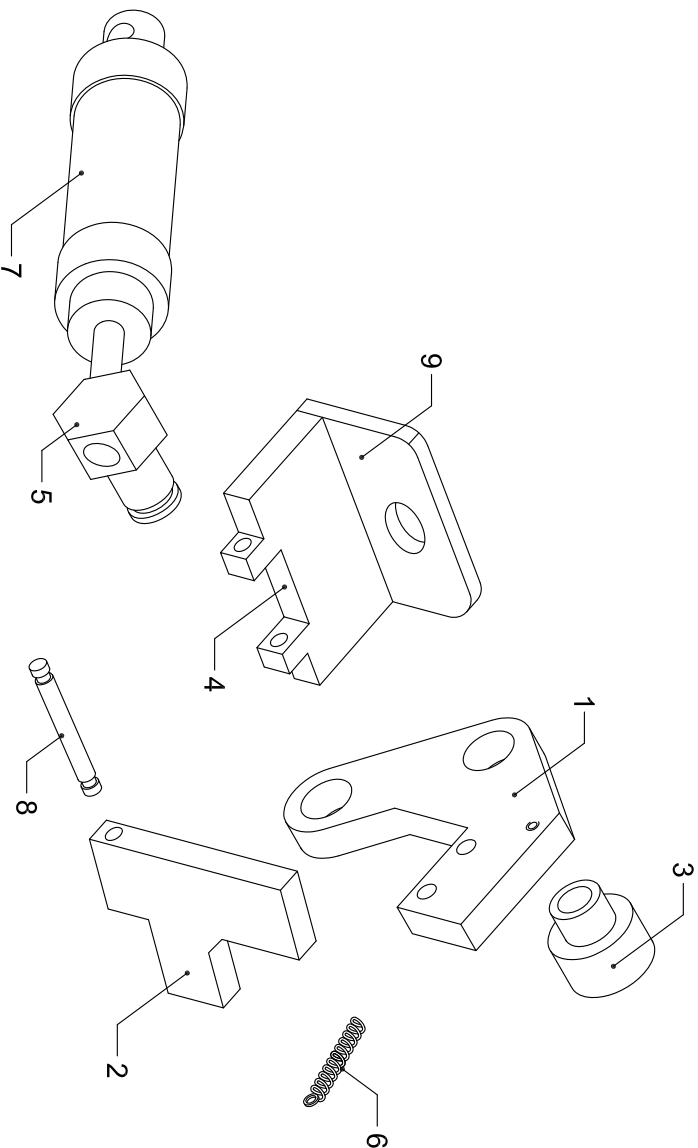
N.	Code	QTY	Denomination
1	J221002	1	Motor
2	P48200100	1	Seat
3	RA26DR1600	1	Gcar Wheel T=22
4	P48200200	1	Gcar Wheel T=42
5	P48200300	1	Pulley 15T
6	B6000ZZ	2	Bearing
7	BTLA1212	2	Bearing TLA1212
8	BIRT812	2	Bearing IRT812
9	P63200500	1	Belt
10	P63200300	1	Seat
11	P63200400	2	Cover
12	P63200200	1	Spacer



MM-Series

FEED MOTOR DRIVE

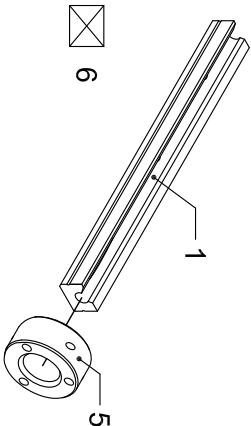
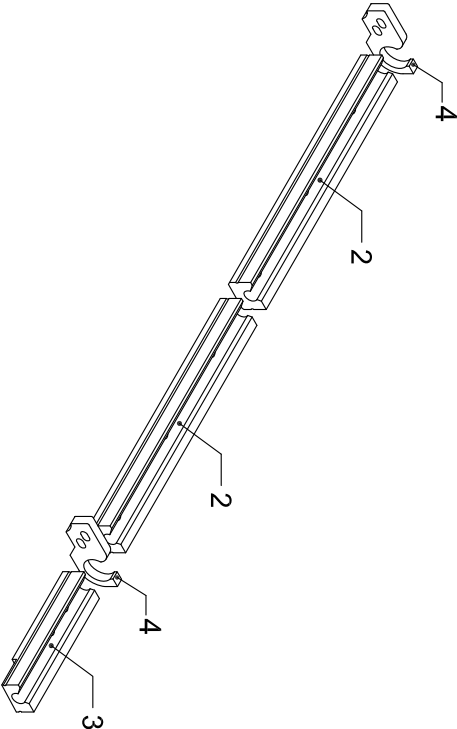
N.	Code	QTY	Denomination
1	P75201600	1	Bracket
2	P75201700	1	Plate
3	P45200300	1	Bush
4	P75201800	1	Plate
5	P53200401	1	Connector
6	G92120600	1	Spring
7	A11110700	1	Cylinder MAL-CA-20x10
8	G92120700	1	Central shaft
9	P75201900	1	Plate



MM-Series

CUTTING DEVICE

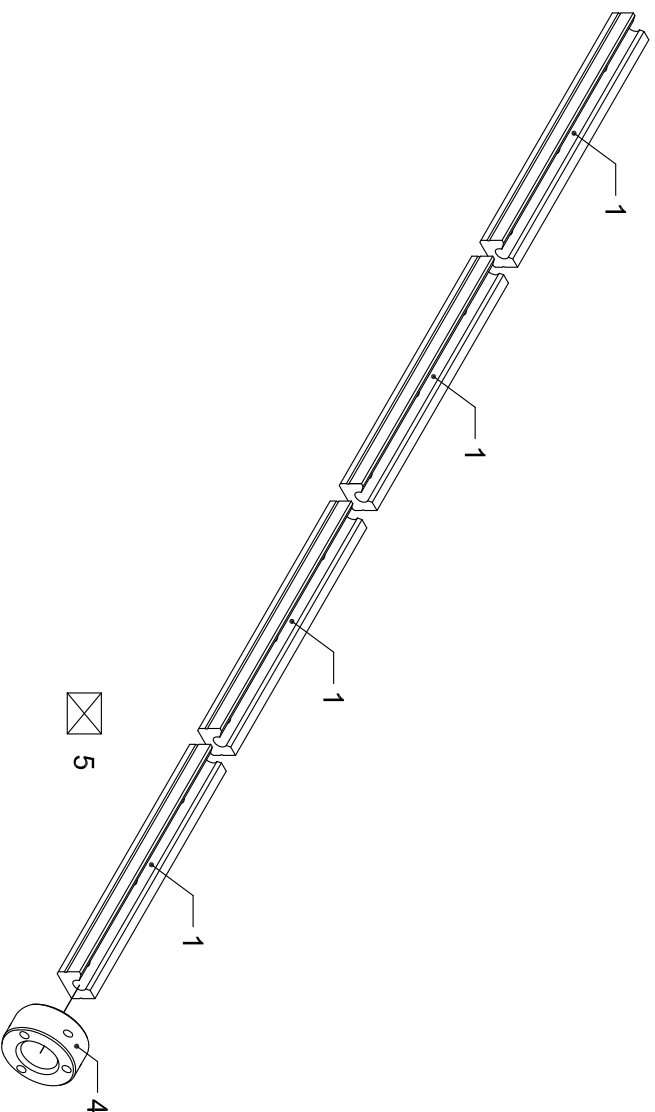
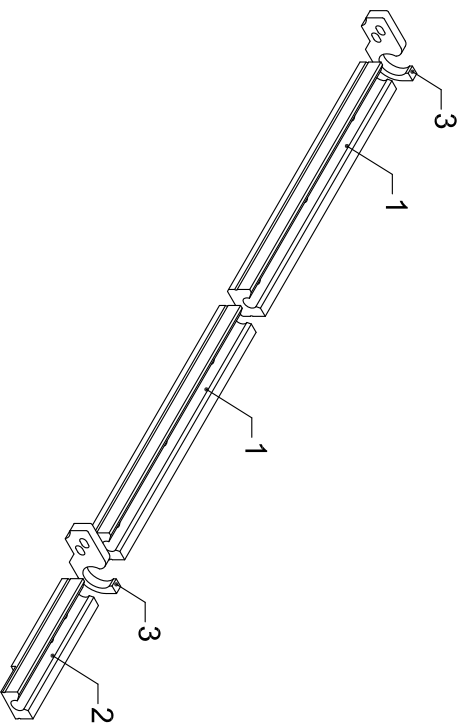
N.	Code	QTY	Denomination
1	P59__0162	1	Guide channel L=626
2	P59__0154	2	Guide channel L=540
3	P59__0136	1	Guide channel L=365
NOMINAL DIAMETER D. → 08 12 16 20 23 25 ^{ØA} 8 14 18 22 24 28			
4	P53__0201	2	Anchor
NOMINAL DIAMETER D. → 08 12 16 20 23 25			
5	P82__0803	1	Fixed block
6	HL59__221	1	Lower guide channel
NOMINAL DIAMETER D. → 08 12 16 20 23 25 ^{ØA} 8 14 18 22 24 28			



MM-Series

QUICK-GUIDE CHANNEL 22

Tab.
Q070 2



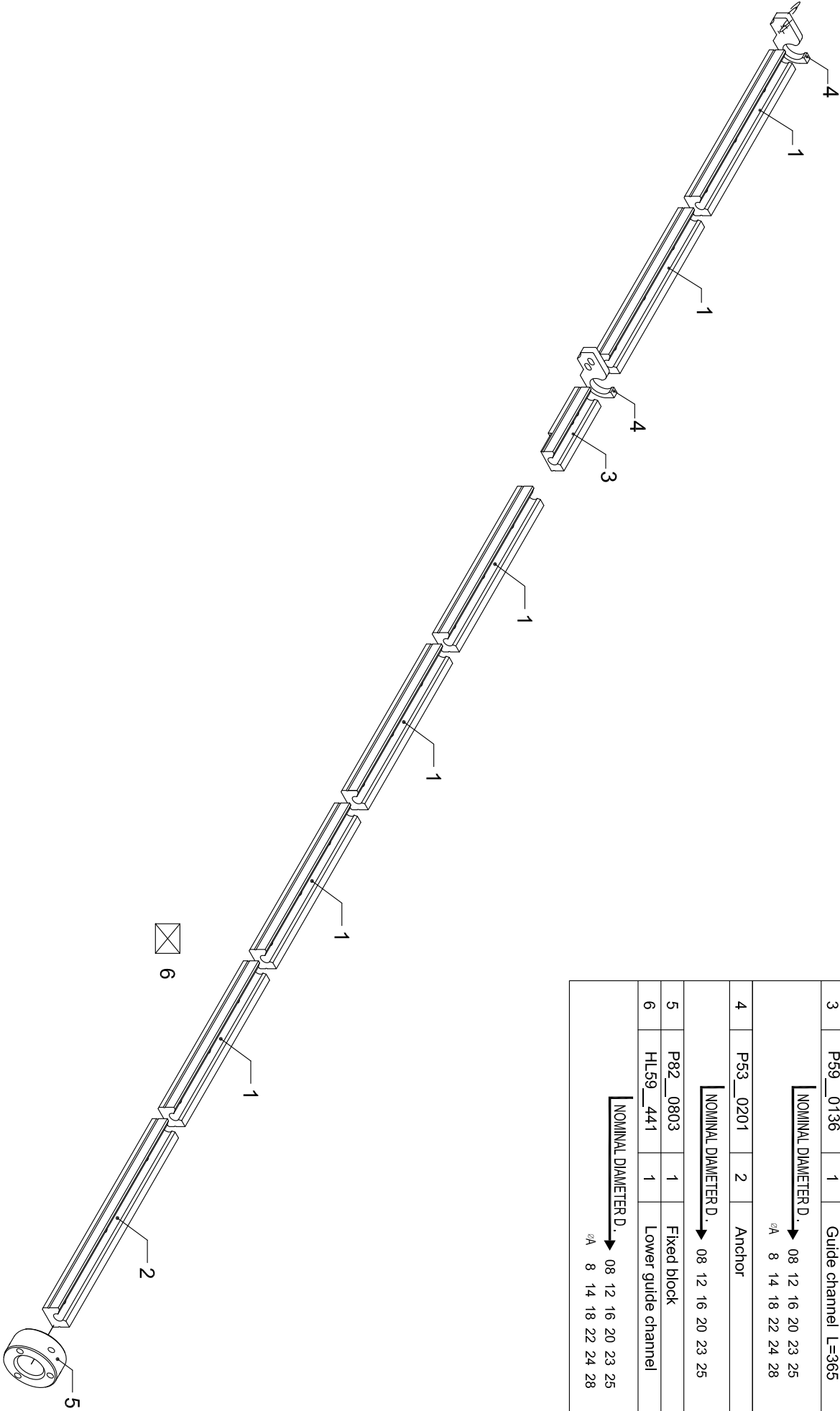
N.	Code	QTY	Denomination
1	P59__0154	6	Guide channel L=540
2	P59__0136	1	Guide channel L=365
			NOMINAL DIAMETER D. → 08 12 16 18 20 23 25 øA 8 14 18 20 22 24 28
3	P53__0201	2	Anchor
			NOMINAL DIAMETER D. → 08 12 16 18 20 23 25
4	P82__0803	1	Fixed block
5	HL59__371	1	Lower guide channel
			NOMINAL DIAMETER D. → 08 12 16 18 20 23 25 øA 8 14 18 20 22 24 28

MM-Series

QUICK-GUIDE CHANNEL 37

Tab.
Q071 3

N.	Code	QTY	Denomination
1	P59__0154	6	Guide channel L=540
2	P58__0158	1	Guide channel L=582
3	P59__0136	1	Guide channel L=365
NOMINAL DIAMETER D. → 08 12 16 20 23 25 ØA 8 14 18 22 24 28			
4	P53__0201	2	Anchor
NOMINAL DIAMETER D. → 08 12 16 20 23 25			
5	P82__0803	1	Fixed block
6	HL59__441	1	Lower guide channel
NOMINAL DIAMETER D. → 08 12 16 20 23 25 ØA 8 14 18 22 24 28			



MM-Series

QUICK-GUIDE CHANNEL 44

Tab.
Q0721

1	2	3	4	5	6
Push head	Push head	Push head	Push head	Push head	Push head
P52120100	13	17	21	23	27
QTY	1	1	1	1	1

Rear bar	Ø	QTY
P52120600	13	1
P52160600	17	1
P52200600	21	1
P52230600	23	1
P52250600	27	1

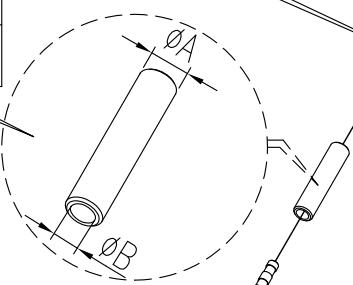
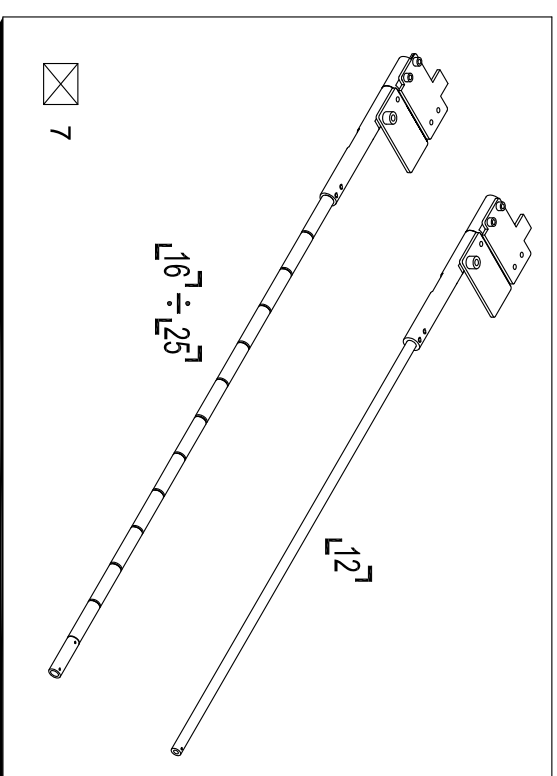
Push bar sleeve(PE)	ØA	ØB	QTY	
16#	P54160400	Ø15.5	Ø10.1	12
20#	P54200400	Ø19.5	Ø12.1	12
23#	P54230400	Ø21.5	Ø12.1	12
25#	P54250416	Ø24.5	Ø16.1	12

Code	Bar pusher	ØA	QTY
P54160102	16#	Ø10	1
P54200102	20#	Ø12	1
P54250102	25#	Ø16	1

Grease nipple	ØA	QTY
P54160500	Ø16	1
P54200500	Ø20	1
P54230500	Ø23	1
P54250500	Ø25	1

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

※ R is Right thread

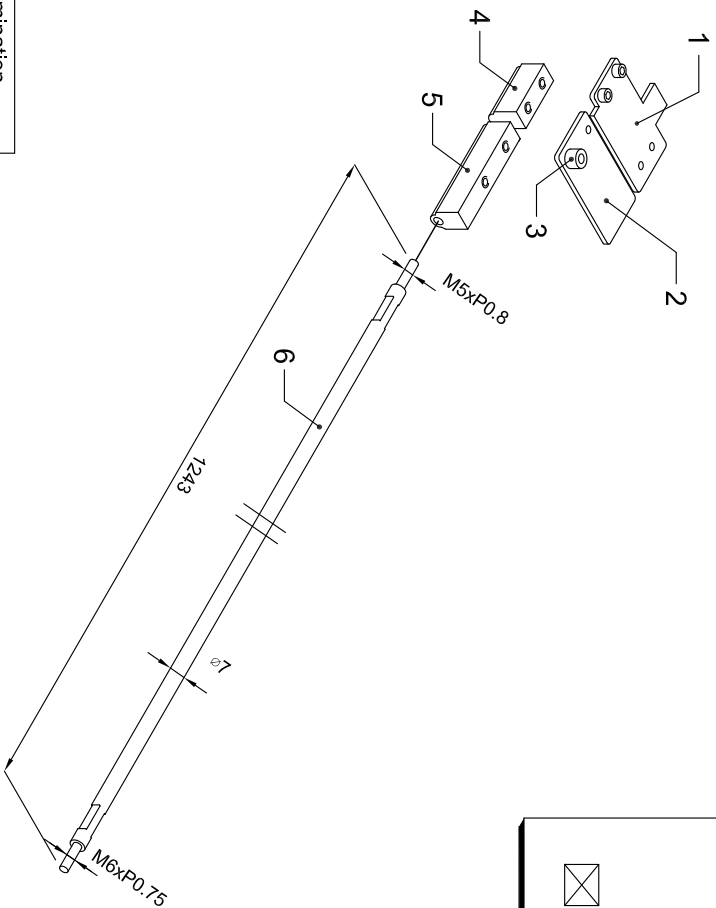
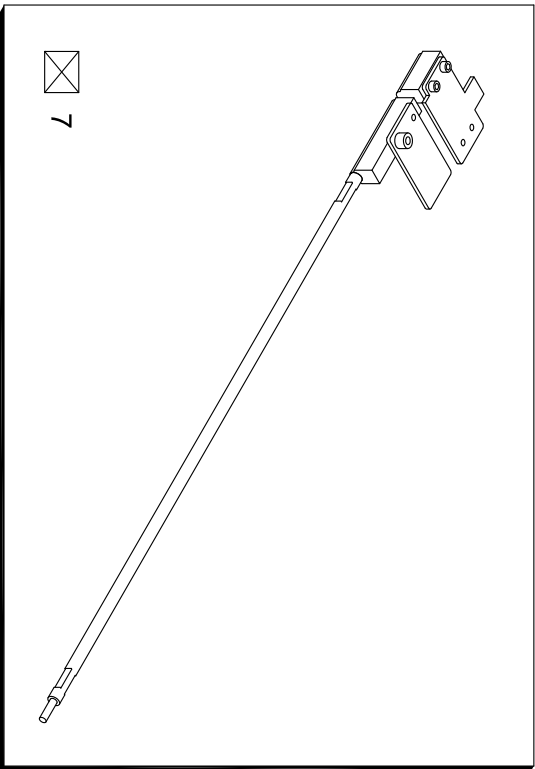


N.	Code	QTY	Denomination
1	P52XX0100	1	Push head
2	P52200200	4	Bush
3	P52200300	1	Plate
4	P52200500	1	Press plate
5	P52XX0600	1	Rear bar
6	P52200700	1	Stop bush
7	PD52__008	1	Bar pusher device

NOMINAL DIAMETER D. → 12 16 20 23 25

MM-Series

BAR PUSHER DEVICE-ITEMCA



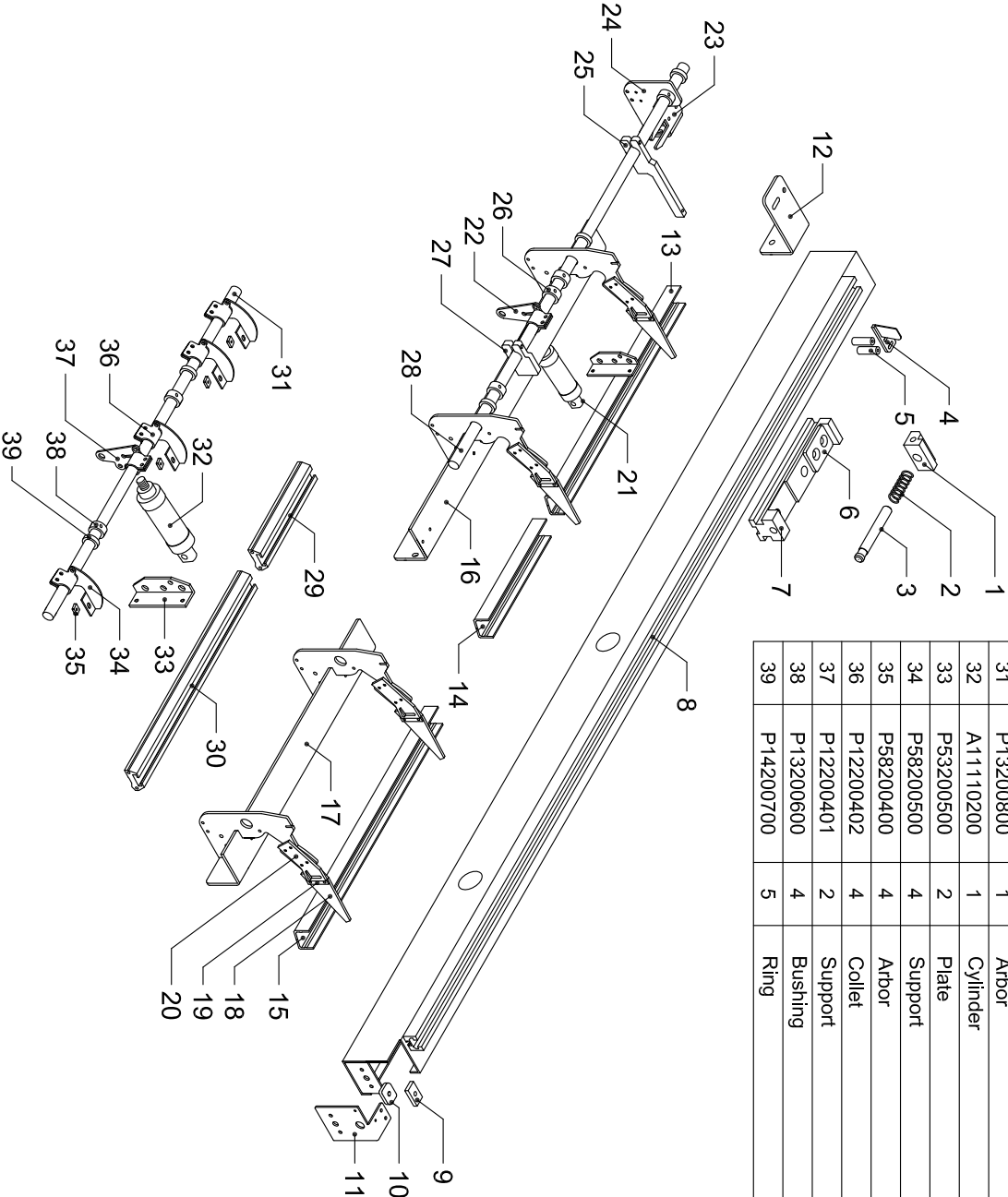
N.	Code	QTY	Denomination
1	P52200300	1	Plate
2	P52200500	1	Push plate
3	P52200700	1	Stop bush
4	P52080100	1	Push head
5	P52080600	1	Rear bar
6	P54080102	1	Bar pusher L=1243
7	PD5208008	1	Bar pusher device

MM-Series

8MM PUSHER DEVICE FOR MINUTEMAN 320

N.	Code	QTY	Denomination	N.	Code	QTY	Denomination
27	P53200200	1	Anchor	1	P61200400	1	Stop block
28	P13200814	1	Arbor L=1400	2	P61200600	1	Spring
29	P58200331	1	Upper guide channel L=310	3	P61200300	1	Central shaft
30	P58200362	1	Upper guide channel L=620	4	P62200300	1	Stop plate
31	P13200800	1	Arbor	5	P62200400	2	Bush
32	A11110200	1	Cylinder	6	P52200400	1	Press plate
33	P53200500	2	Plate	7	P61200200	1	Push block
34	P58200500	4	Support	8	P61200122	1	Rail L=2632
35	P58200400	4	Arbor	9	P62201800	1	Block
36	P12200402	4	Collet	10	P62201700	1	Stop block
37	P12200401	2	Support	11	P43201400	1	Extension plate
38	P13200600	4	Bushing	12	P62200710	1	Anchor
39	P14200700	5	Ring	13	P58200100	1	Back aluminum batten

N.	Code	QTY	Denomination
14	P58200200	1	Center aluminum batten
15	P58200122	1	Aluminum batten 22
16	P16200100	1	Seat
17	P16200122	1	Seat 22
18	P13200300	4	Press plate
19	P13200400	4	Plate
20	P13200200	4	Connection plate
21	A11110300	1	Cylinder
22	P12200403	2	Support
23	P62201900	1	Plate
24	P13200500	1	Anchor
25	P53200200	1	Anchor
26	P13200700	1	Bushing

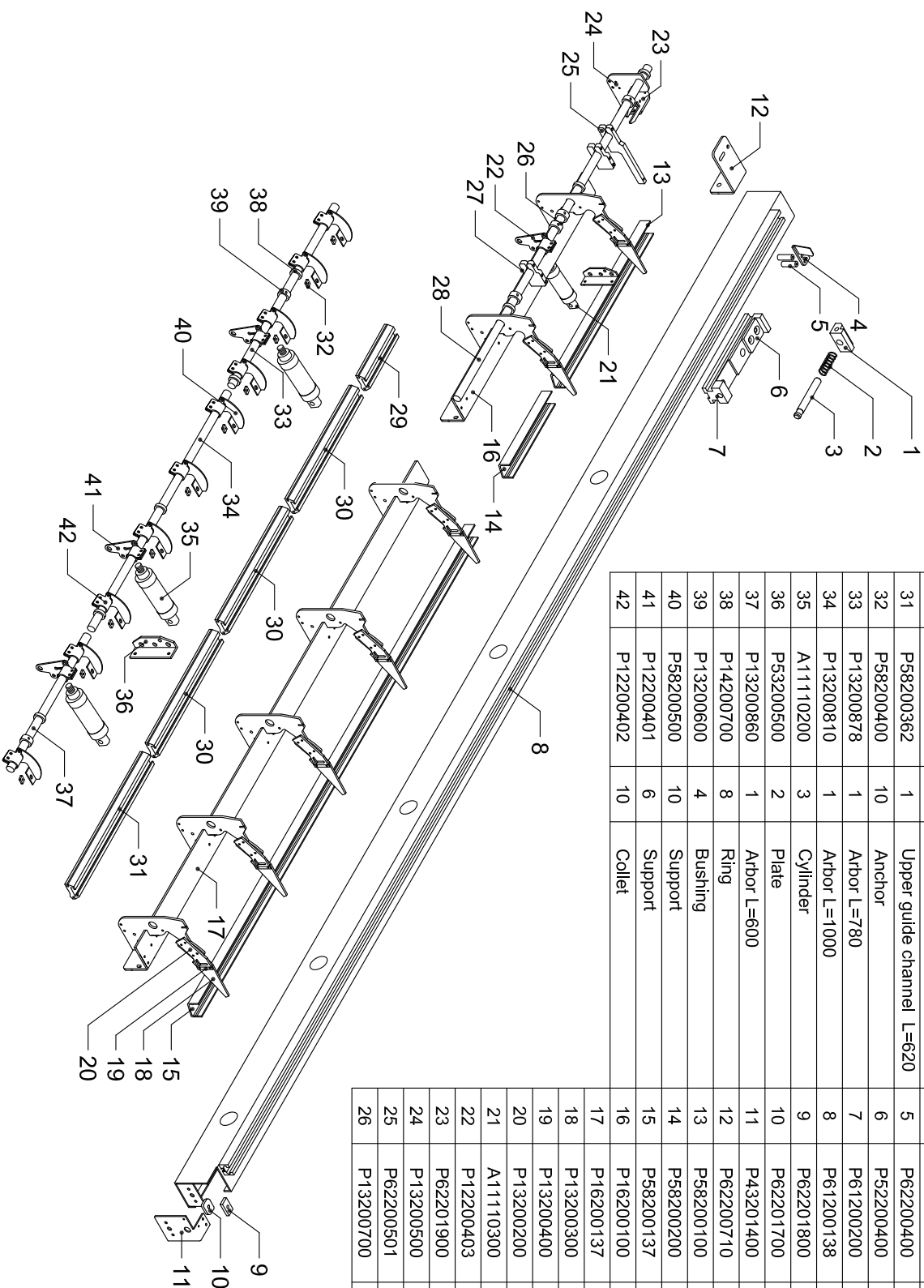


MM-Series

SUPPORT 22

Tab.
Q090 5

N.	Code	QTY	Denomination	N.	Code	QTY	Denomination
27	P53200200	2	Anchor	1	P61200400	1	Stop block
28	P13200814	1	Arbor L=1400	2	P61200600	1	Spring
29	P58200331	1	Upper guide channel L=310	3	P61200300	1	Central shaft
30	P58200350	3	Upper guide channel L=500	4	P62200300	1	Stop plate
31	P58200362	1	Upper guide channel L=620	5	P62200400	2	Bush
32	P58200400	10	Anchor	6	P52200400	1	Press plate
33	P13200878	1	Arbor L=780	7	P61200200	1	Push block
34	P13200810	1	Arbor L=1000	8	P61200138	1	Rail L=4166
35	A11110200	3	Cylinder	9	P62201800	1	Block
36	P53200500	2	Plate	10	P62201700	1	Stop block
37	P13200860	1	Arbor L=600	11	P43201400	1	Extension plate
38	P14200700	8	Ring	12	P62200710	1	Anchor
39	P13200600	4	Bushing	13	P58200100	1	Back aluminum batten
40	P58200500	10	Support	14	P58200200	1	Center aluminum batten
41	P12200401	6	Support	15	P58200137	1	Aluminum batten 37
42	P12200402	10	Collet	16	P16200100	1	Seat
				17	P16200137	1	Seat 37
				18	P13200300	7	Press plate
				19	P13200400	7	Plate
				20	P13200200	7	Connection plate
				21	A11110300	1	Cylinder
				22	P12200403	2	Support
				23	P62201900	1	Plate
				24	P13200500	1	Anchor
				25	P62200501	1	Support
				26	P13200700	2	Bushing

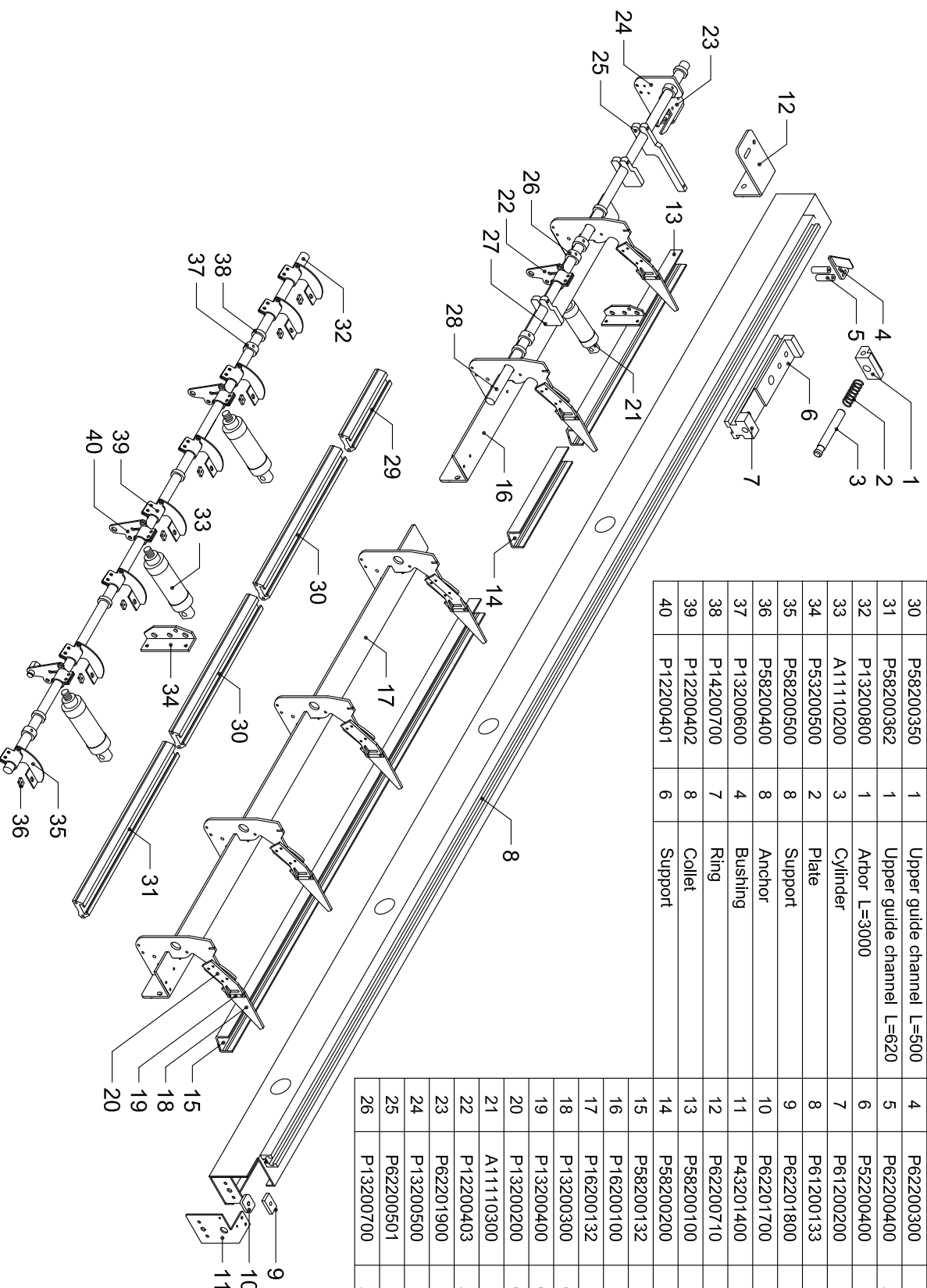


MM-Series

SUPPORT 37

Tab. Q0091 5

N.	Code	QTY	Denomination	N.	Code	QTY	Denomination
27	P53200200	2	Anchor	1	P61200400	1	Stop block
28	P13200814	1	Arbor L=1400	2	P61200600	1	Spring
29	P58200331	1	Upper guide channel L=310	3	P61200300	1	Central shaft
30	P58200350	1	Upper guide channel L=500	4	P62200300	1	Stop plate
31	P58200362	1	Upper guide channel L=620	5	P62200400	2	Bush
32	P13200800	1	Arbor L=3000	6	P52200400	1	Press plate
33	A11110200	3	Cylinder	7	P61200200	1	Push block
34	P53200500	2	Plate	8	P61200133	1	Rail L=3666 32#
35	P58200500	8	Support	9	P62201800	1	Block
36	P58200400	8	Anchor	10	P62201700	1	Stop block
37	P13200600	4	Bushing	11	P43201400	1	Extension plate
38	P14200700	7	Ring	12	P62200710	1	Anchor
39	P12200402	8	Collet	13	P58200100	1	Back aluminum batten L=1047
40	P12200401	6	Support	14	P58200200	1	Center aluminum batten L=310
				15	P58200132	1	Aluminum batten L=1675 32#
				16	P16200100	1	Seat L=1342.5
				17	P16200132	1	Seat L=1690 32#
				18	P13200300	6	Press plate
				19	P13200400	6	Plate
				20	P13200200	6	Connection plate
				21	A11110300	1	Cylinder
				22	P12200403	2	Anchor
				23	P62201900	1	Plate
				24	P13200500	1	Anchor
				25	P62200501	1	Anchor
				26	P13200700	2	Bushing



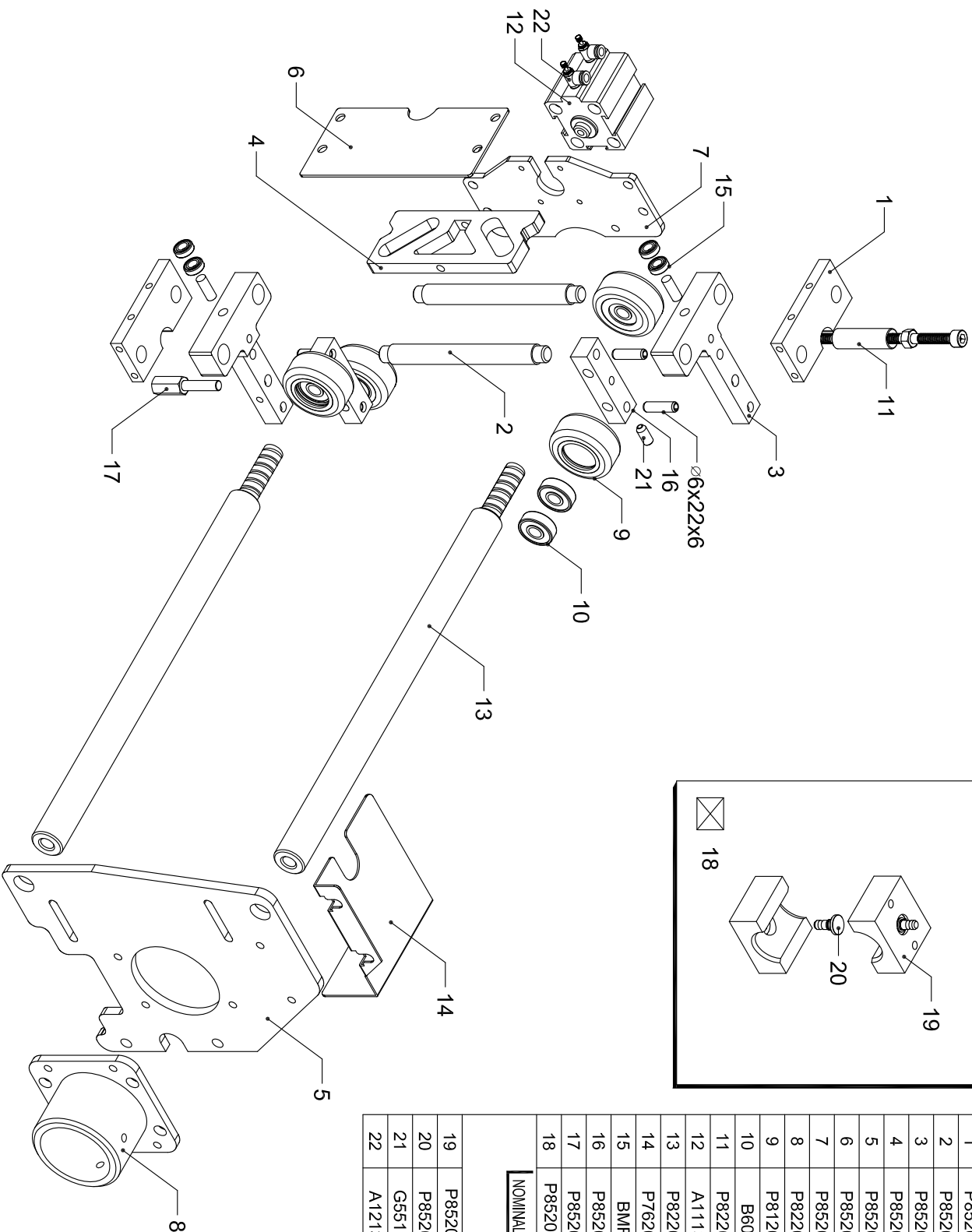
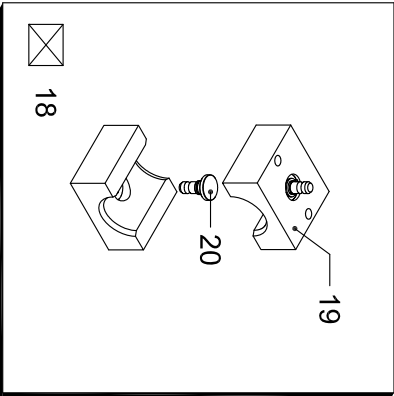
MM-Series

SUPPORT 32

Q093

3

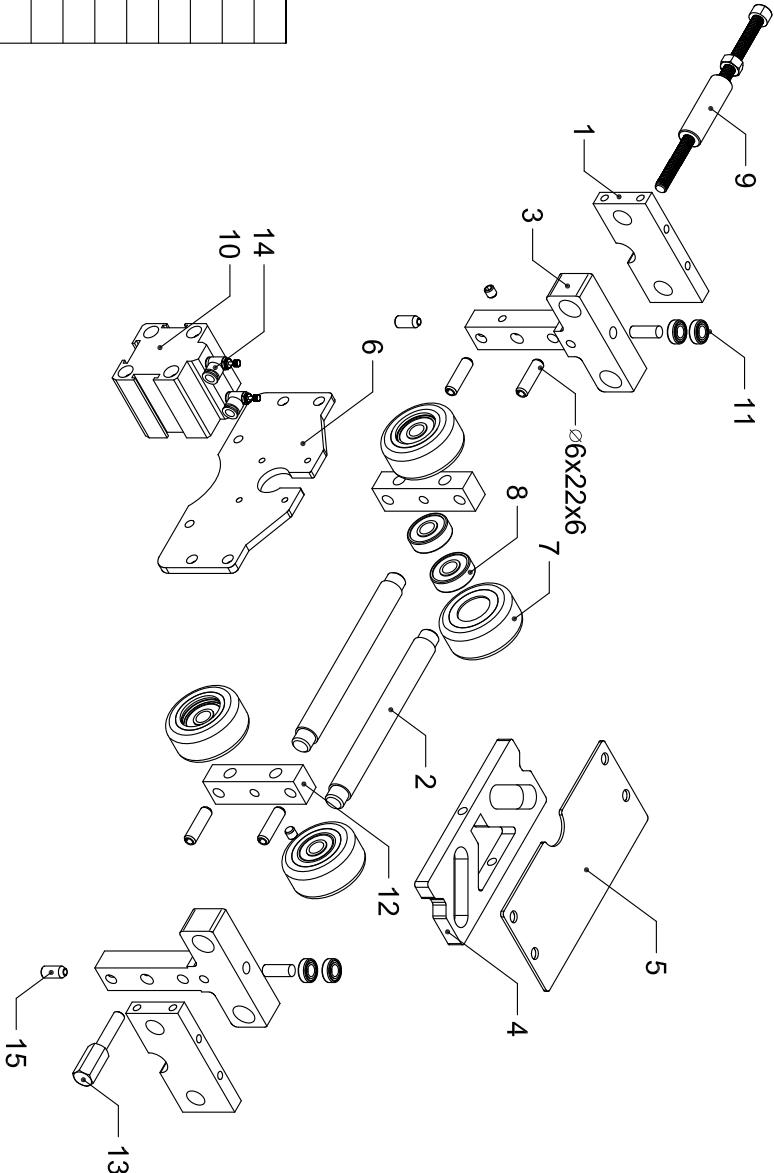
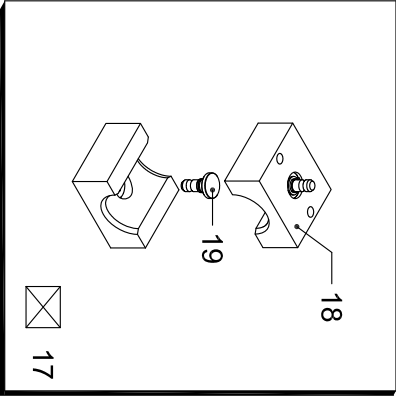
Tab.



N.	Code	QTY	Denomination
1	P85200700	2	Plate
2	P85200100	2	Arbor
3	P85200200	2	Anchor
4	P85200300	1	Plate
5	P85200400	1	Plate
6	P85200500	1	Plate
7	P85200600	1	Plate
8	P82200900	1	Anchor
9	P81200400	4	Spacer
10	B608ZZ	8	Bearing
11	P82201101	1	Bushing
12	A11130100	1	Cylinder SDA 25x20
13	P82201200	2	Fix rod
14	P76202100	1	Cover
15	BMR126	4	Bushing
16	P85200900	2	Anchor
17	P85201300	1	Arbor
18	P852010__A	1	ANTI-VIBRATION BUSHING SET
NOMINAL DIAMETER D. 08 10 12 14 16 18 20 22 9 11 13 15 17 19 21 23			
19	P852010__	2	Bushing block
20	P85200800	2	Arbor
21	G55120900	2	Ball BP-06L
22	A12130300	2	Flow regulator M5,6

MM-Series

FIRST ANTI-VIBRATION DEVICE



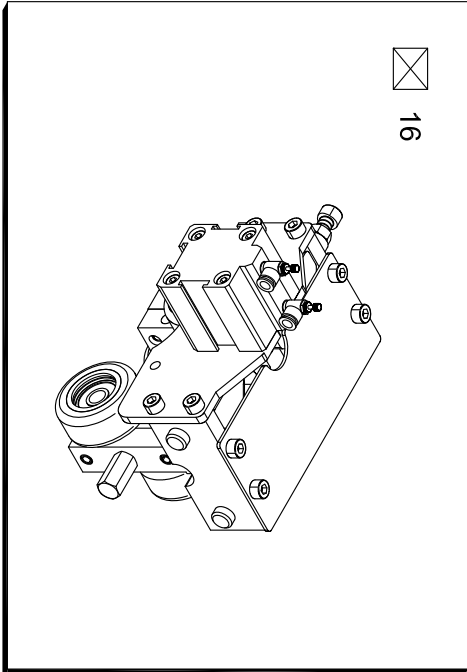
N.	Code	QTY	Denomination
1	P85200700	2	Plate
2	P85200100	2	Arbor
3	P85200200	2	Anchor
4	P85200300	1	Plate
5	P85200500	1	Plate
6	P85200600	1	Plate
7	P81200400	4	Spacer
8	B608ZZ	8	Bearing
9	P82201101	1	Bushing
10	A11130100	1	Cylinder SDA 25x20
11	BM/R126	4	Bushing
12	P85200900	2	Anchor
13	P85201300	1	Arbor
14	A12130300	2	Flow regulator M5,ø6
15	G55120900	2	Ball BP-06L
16	P85200001	1	Anti-vibration device
17	P852010_A	1	ANTI-VIBRATION BUSHING SET

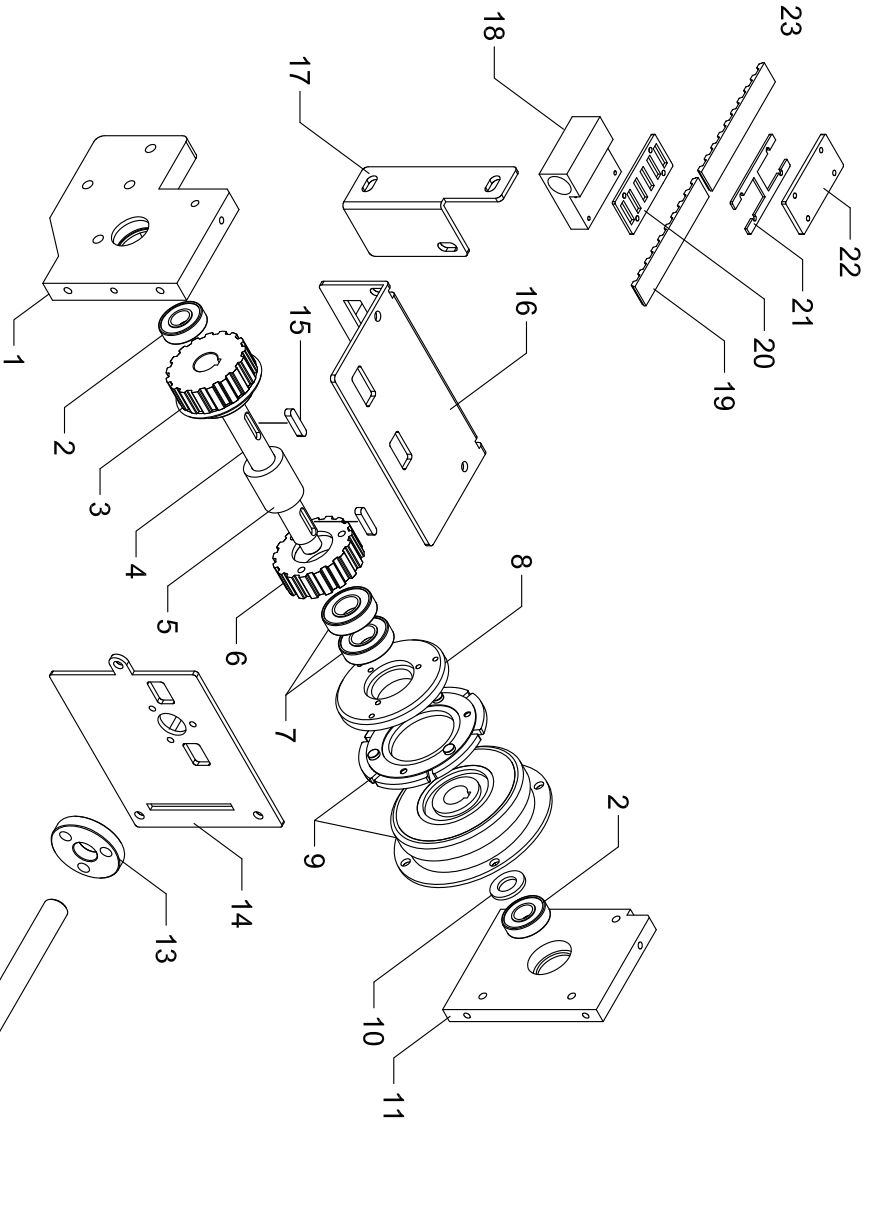
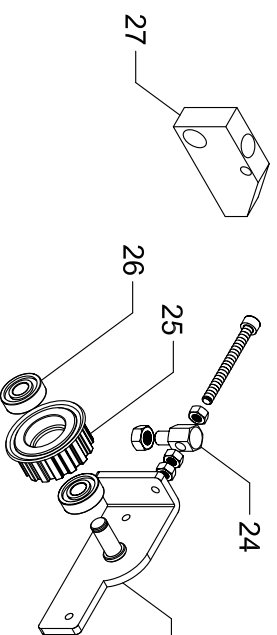
NOMINAL DIAMETER D. → 08 10 12 14 16 18 20 22
ø 9 11 13 15 17 19 21 23

18	P852010_	2	Bushing block
19	P85200800	2	Arbor

MM-Series

ANTI-VIBRATION DEVICE





N.	Code	QTY	Description
1	P49200700	1	Base Plate
2	B6001ZZ	2	Bearing_6001ZZ
3	P49201700	1	Pulley_L_17T
4	P49203300	1	Shaft
5	P49203900	1	Spacer
6	P49203100	1	Pulley_L_17T
7	B6002ZZ	2	Bearing_6002ZZ
8	P49203200	1	Spacer
9	RA26DR2000	1	Clutch
10	P49203800	1	Spacer
11	P49203400	1	Plate
12	P49202400	1	Bar
13	P49202600	1	Bush
14	P49203500	1	Front Cover
15	ZS06050520	2	Key_5x20
16	P49203600	1	Rear Cover
17	P49203700	1	Support
18	P49201000	1	Slider
19	P49202300	1	Belt
20	P49201300	1	Seat
21	P49201400	1	Spacer
22	P49201500	1	Cover
23	P49200400	1	Tighten Seat
24	P49200500	1	Support
25	P48200300	1	Pulley_L_15T
26	B6000ZZ	2	Bearing_6000ZZ
27	P11201900	1	Support

MM-Series

SYNCHRONIZATION

N.	Code	QTY	Denomination
1	P78200101	1	Telescopic pipe L=235
2	P78200102	1	Collet
3	P78200201	1	First block L=195
4	P78200700	1	Oil gathering L=243
5	P78200500	1	Ring
6	P78200600	1	Oil gathering L=235
7	HP77__001	1	Telescopic front nose

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

Bushing
P78__0300

ØA	--
14	12
18	16
22	20
24	23

Collet
P78__0202

ØA	--
18	12
27.5	16
28	20
30	23

Small pipe L=275
P78__0400
0401+0402

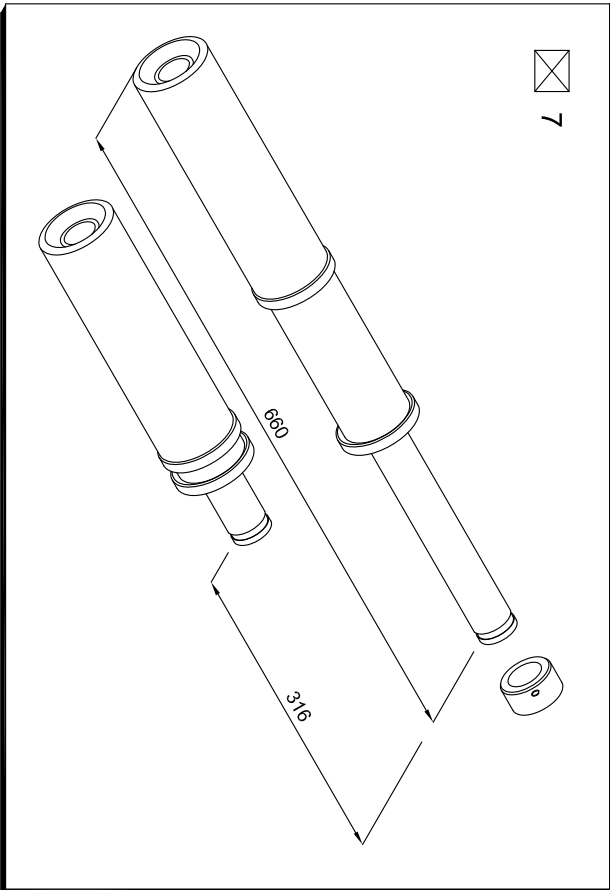
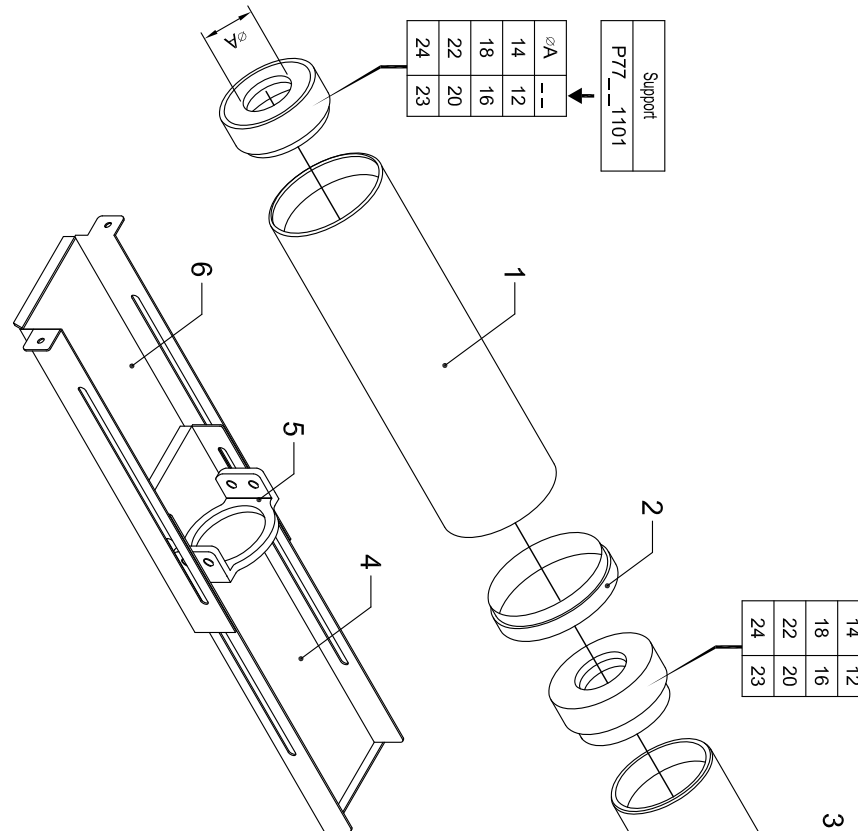
ØA	--	ØB
14	12	18
18	16	27.4
22	20	28
24	23	30

Bushing
P78__1500

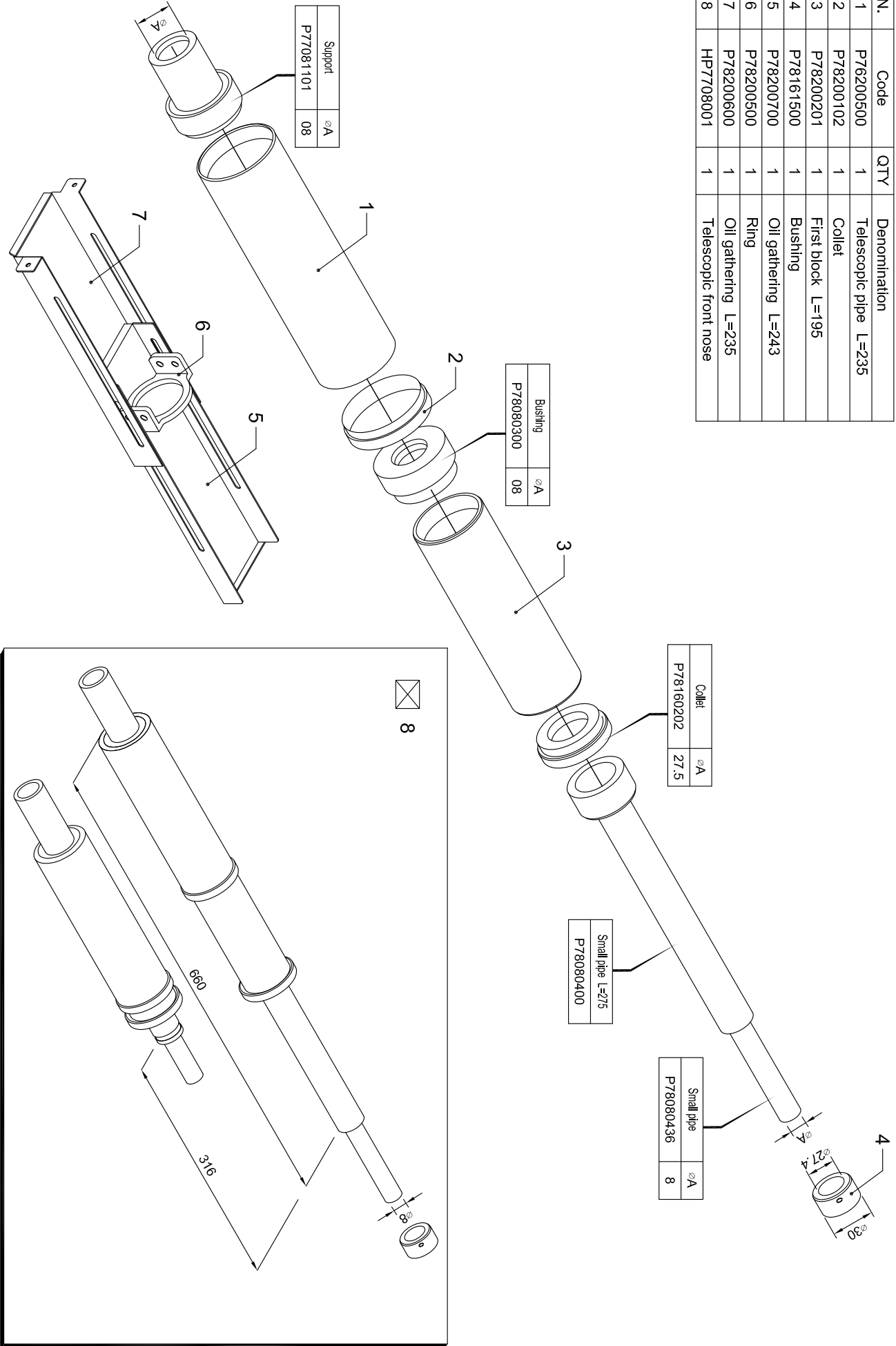
ØA	--
12	18
16	27.4
20	28

Support
P77__1101

ØA	--
14	12
18	16
22	20
24	23



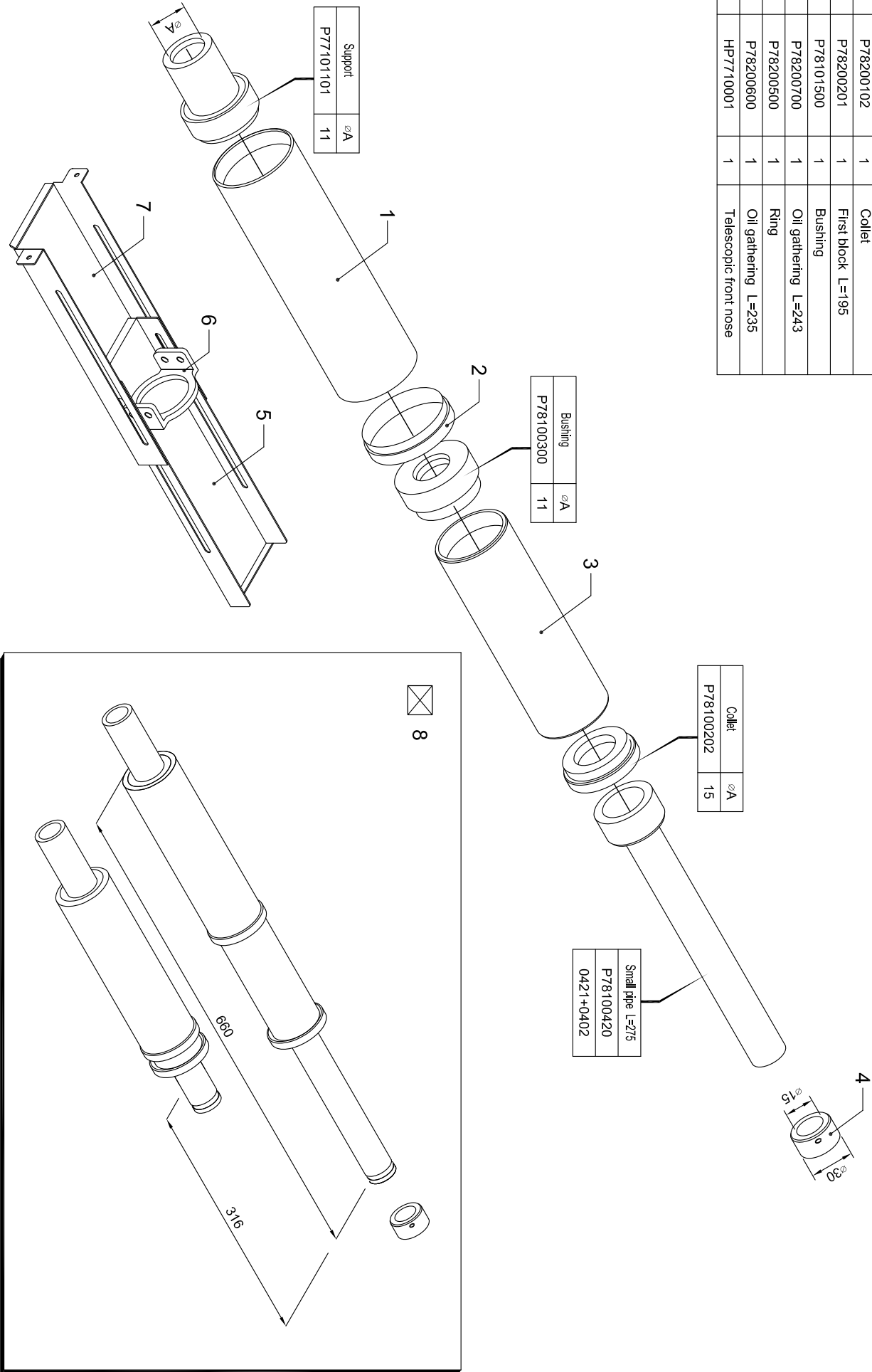
N.	Code	QTY	Denomination
1	P76200500	1	Telescopic pipe L=235
2	P78200102	1	Collet
3	P78200201	1	First block L=195
4	P78161500	1	Bushing
5	P78200700	1	Oil gathering L=243
6	P78200500	1	Ring
7	P78200600	1	Oil gathering L=235
8	HP7708001	1	Telescopic front nose



MM-Series

316MM TELESCOPIC FRONT NOSE-8#

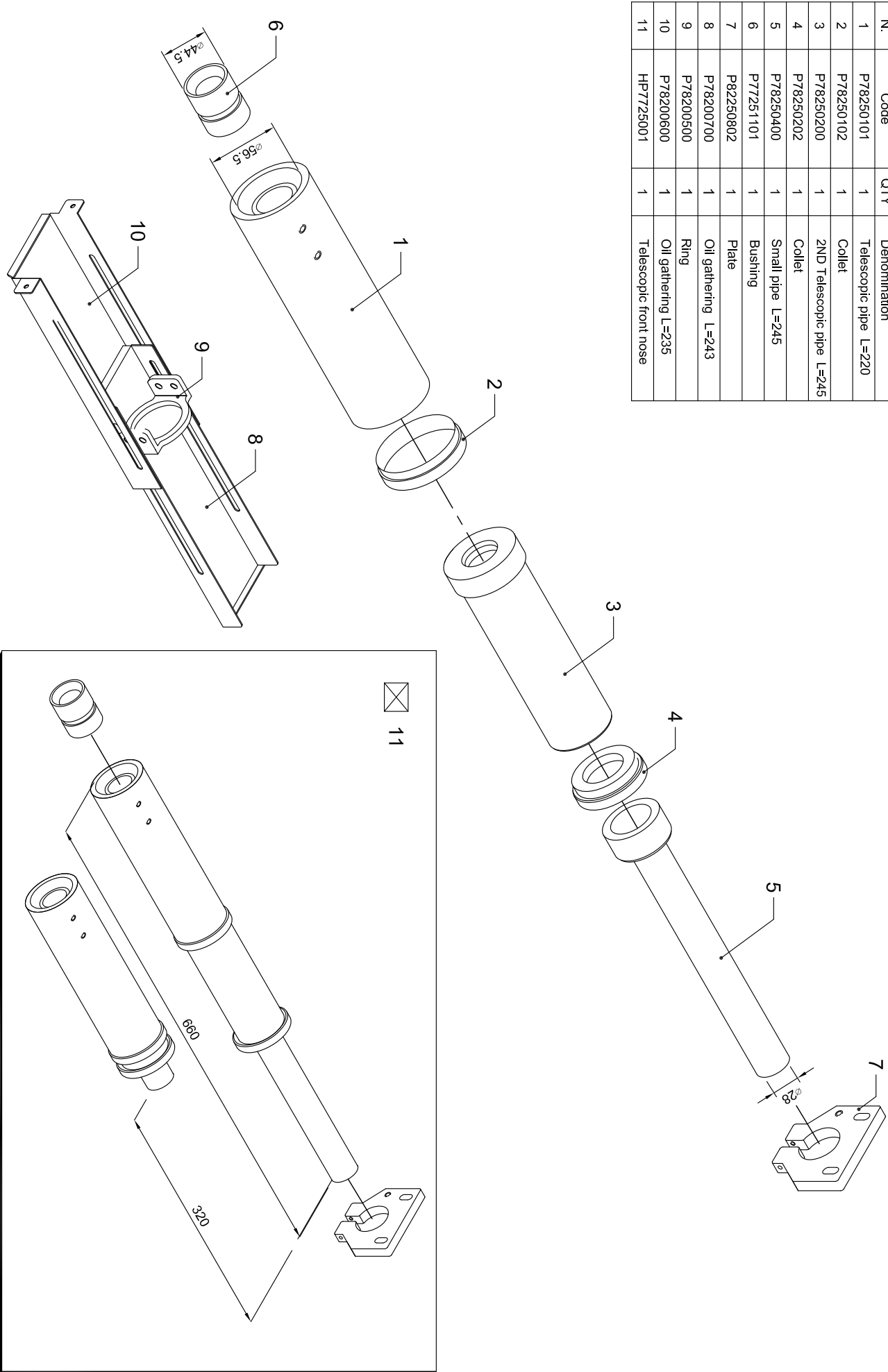
N.	Code	QTY	Denomination
1	P78200101	1	Telescopic pipe L=235
2	P78200102	1	Collet
3	P78200201	1	First block L=195
4	P78101500	1	Bushing
5	P78200700	1	Oil gathering L=243
6	P78200500	1	Ring
7	P78200600	1	Oil gathering L=235
8	HP7710001	1	Telescopic front nose



MM-Series

316MM TELESCOPIC FRONT NOSE-10#

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



MM-Series

320MM TELESCOPIC FRONT NOSE-25#



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