

FleXsys

INSTRUCTION MANUAL FLEXSYS BAR UNLOADING MAGAZINE

TABLE OF CONTENTS PART 1

1.-GENERAL REMARKS

2. - OPERATION CYCLE - CNC LATHE - FLEXSYS

3. - PUTTING INTO OPERATION THE FLEXSYS

3.1. - COMPRESSED AIR SUPPLY

3.2. - POWER SUPPLY

3.3. - EMERGENCY STOP

3.4. - CONTROL PANEL

3.4.1. - MANUAL OPERATION

3.4.2. - AUTOMATIC OPERATION

3.5. - DOOR SWITCH

4. - ADJUSTING OF UNLOADING SYSTEM

4.1. - ADJUSTING OF GRAB POSITION

4.2. - ADJUSTING OF SLOW POSITION

4.3. - ADJUSTING OF DROP OFF POSITION

4.4. - ADJUSTING OF WAITING POSITION

4.5. - ADJUSTING OF INCLINATION OF MAGAZINE

4.6. - ADJUSTING OF BAR EJECTORS

4.7. - ADJUSTING OF HOLD DOWN FINGERS

4.8. - SELECTION OF EXTRACTION BARS

4.9. - CHANGING OF SPINDLE LINERS

5. - PROGRAM PARAMETERS

5.1. - GRAB POSITION

5.2. - SLOW RETURN POSITION

5.3. - BAR DROP OFF POSITION

5.4. - HOME POSITION

6. - ALARMS

7. - TECHNICAL DATA

1.) GENERAL REMARKS

- Ÿ BARS ARE COMPLETELY REMOVED FROM CNC LATHE
- Ÿ THE EXTRACTOR BAR NEEDS TO BE THE CORRECT LENGTH FOR THE PART TO BE EXTRACTED
- Ÿ DURING MACHINING THERE IS NOT MECHANICAL CONTACT WITH PARTS
- Ÿ IF THIS IS THE LOADER / UNLOADER VARIANT, BARS WILL BE LOADED BEFORE BEING UNLOADED

3.) PUTTING INTO OPERATION

3.1) COMPRESSED AIR SUPPLY

Minimum pressure 90 psi.

Compressed air consumption about 50 L /h

Compressed air supply unit-minimum cross section 8mm

The service unit needs to be adjusted to 90 psi.

3.2) POWER SUPPLY

220 / 240 V 50/60 Hz.

In order to operate the FLEXSYS Master Switch needs to be on

3.3) EMERGENCY STOP

By pressing the emergency stop the bar feeder becomes completely disabled

And signal of emergency condition will be sent to CNC

3.4) DOOR SWITCH

By opening the rear door the unloader control display will show an alarm “Door Open”
the cover needs to be closed to eliminate warning.

3.5) CONTROL PANEL

All alarms need to be clear before you can do anything with the control panel.

3.5.1a) MANUAL OPERATION Loader / Unloader

- F2** This puts the machine into Manual Mode
- F2** Returns the machine to the main screen
- F1** Moves the pusher backwards
- F3** Moves the pusher forwards
- F4** Loads a bar into the magazine
- F6** Unloads the bar from the magazine

3.5.1b) MANUAL OPERATION Unloader

- F2** This puts the machine into Manual Mode
- F2** Returns the machine to the main screen
- F1** Moves the pusher backwards
- F3** Moves the pusher forwards
- F4** Fires the extractor pin
- F5** Fires the Lifters
- F6** Fires the end effector (magnet or ID Gripper)

[F1] Enter Auto		
[F2] Manual		
[F3] Setup		

Pos.	#####.#	
Pin	Lift	Grab
←	[F2] Ret	→

3.5.2a) AUTOMATIC OPERATION LOADER / UNLOADER

- F1** By pressing [F1] the Loader / Unloader will change from “Manual mode” to “Automatic Mode”
Or if in “Automatic “to “Manual Mode”
- F7** If this is pressed, the machine will skip the bar loading process

Process – Once the machine enters automatic mode, it will move the pusher home and wait for a command from the lathe, this is usually a M-Code depending on how the wiring was done on set up. If you tell the machine to load a bar, it will drop a bar into the Tray, Push the bar to a stop, then return to the waiting position (or wait at the back of the bar depending on settings). After machining is done, the lathe commands the Loader / Unloader to unload the part, the Loader / Unloader then moves forward to the back of the part, grabs it, and pulls it back into the machine. After it has reached its drop position, it drops the bar.

3.5.2b) AUTOMATIC OPERATION UNLOADER

- F1** By pressing [F1] Unloader will change from “Manual mode” to “Automatic Mode”
Or if in “Automatic “to “Manual Mode”

Process – When the Unloader is put into Automatic mode, it will immediately move to the waiting position and wait. Once the lathe is ready for the Unloader to unload the part, it sends us either the remove part m code or the remove remnant m code signals. The unloader then moves to the appropriate position, depending on what was commanded by the lathe, to remove the material. Once in position, it turns on the end effector and tells the lathe it is done. The lathe then opens the collet and lets the unloader know that it can proceed. The unloader then retracts to the unload position, fires the extractor pin, and returns home. After it is home, it ejects the part onto the material rack and starts the process over again.

[F1] Enter Auto
[F2] Manual
[F3] Setup

Pos.	#####.#
S0: Waiting on Lathe	
[F1] Exit Auto	

4a.) PARAMETER INFORMATION LOADER / UNLOADER

1. Wait or Return. If set to 0, the pusher will wait at the back of the part until machining is finished. If set to 1, the pusher will come back to the waiting position before telling the lathe to continue on with the machining process.

Pos.	#####.#
0: Wait	##
1: Return	
[F1] Next Screen	

2. Slowdown Position. This is telling the Loader / Unloader where to slow down when moving to retrieve the part from the collet / chuck or when loading a part to the hard stop.

Pos.	#####.#
Slowdown Position	####.#
[F1] Next Screen	

3. Waiting Position. This is the position the pusher will return to after loading a part.

Pos.	#####.#
Waiting Position	####.#
[F1] Next Screen	

4. Load or Skip L. If set to 0, it will load a part like normal, if set to 1, the machine will skip loading the first part when put into automatic mode. This can also be activated by pressing F7 in automatic mode.

Pos.	#####.#
0: Load	0
1: Skip L	
[F1] Next Screen	

5. Bar Check Position. This is basically saying that if the pusher reaches a certain point and no bar was detected by the measurement flag, throw an alarm because the magazine rack is empty.

Pos.	#####.#
Bar Check Position	####.#
[F1] Return	

4a.) PARAMETER INFORMATION UNLOADER

1. Back of Part – This tells the unloader where the back of the part is that is inside the lathe

Pos.	#####.#
Back of Part	####.#
[F1] Next Screen	

2. Slowdown Position – This tells the unloader where to start slowing down before it gets to the back of the part

Pos.	#####.#
Slowdown Position	####.#
[F1] Next Screen	

3. Waiting Position – The position the unloader sits at while waiting for a command from the lathe

Pos.	#####.#
Waiting Position	####.#
[F1] Next Screen	

4. Remnant Position – Position to move to if a remnant needs to be extracted

Pos.	#####.#
Remnant Position	####.#
[F1] Next Screen	

5. Drop off Position – This is the position that the pusher needs to move to for the extractor rod to remove the part from the pusher.

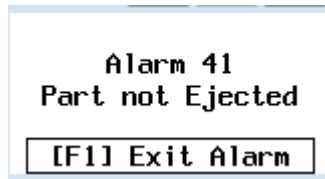
Pos.	#####.#
Drop Off Position	####.#
[F1] Return	

5.) ALARMS

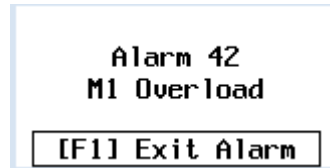
40. Table is full – The part table is full and needs to be emptied before you can continue.

Alarm 40 Table is Full	
[F1] Exit Alarm	

41. Part Not Ejected – Check the channel or collet for the part, it was not ejected and may be stuck. The part sensors may have also missed the part if it was ejected, look into adjusting the sensors to pick up the part more accurately.



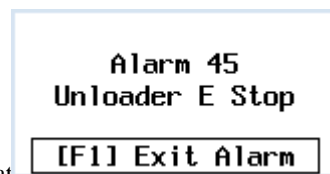
42. M1 Overload – The motor has overloaded, the pusher may of gotten stuck somewhere.



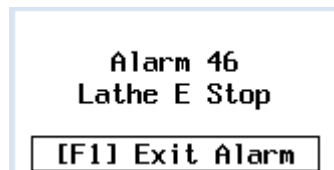
43. Door Open – The hood was opened during operation, put the machine into manual mode first before opening the hood.



45. Unloader E-Stop – The unloader was put into an E-Stop. Make sure the button is released and press F1 to clear the alarm.



46. Lathe E-Stop – The Lathe was placed into an E-Stop. Clear the E-Stop on the lathe and then press F1 to clear the alarm on the unloader.



404. Part Not Retracted – No part was detected when the pusher came back from retrieving the part. Check the lathe for the part.

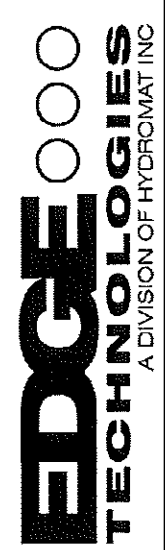


Qty	DESCRIPTION	PART NUMBER	Notes
1	Mitsubishi PLC FX3U	FX3U-48M	MITSUBISHI
1	Mitsubishi Electric Frenic Drive	FR-D720-042-NA	MITSUBISHI
1	24V MEAN WELL POWER SUPPLY	DR-120-24	MEAN WELL
1	Main drive Motor	G3L22N010-BML4A	BROTHER
1	Encoder 1000 Pulses x Revoluton 24vdc	TRD-NH1000RZWD	AUTOMATION DIRECT
1	Bracket Set	14020-12PZ	IGUS
1	Sprocket - Motor	40BS18 7/8	MARTIN
3	Sprocket - Drive / Idler	40B12	Martin
1	Emergency Stop P.B.	GCX1131	AUTOMATION DIRECT
1	Magnetic Clutch (20mm Bore)	72081747	AUTOMATION DIRECT
1	Operator Interface Unit (HMI)	PWS6300S-S	HI-TECH
1	Rheostat 250Oh. 25 W.	RHS250E	AUTOMATION DIRECT
6	Relay 24vdc 2PDT	781-1C-24D	AUTOMATION DIRECT
1	Circuit Breaker 2 Pole (4A)	FAZ-D4/2	EATON
1	Circuit Breaker 1 Pole (6A)	FAZ-D6/1	EATON
1	Circuit Breaker 1 Pole (2A)	FAZ-D2/1	EATON
1	Contactor 24vdc	3TF2	SIEMENS
2	Proximity Sensors HOME SWITCH	AM1-AP-3H	AUTOMATION DIRECT
2	Proximity Sensors FOR HOOD SAFETY	AE1-AP-1F	AUTOMATION DIRECT
2	Reed Switches - door unload cylinder	D-M9PW	Airtac
2	Solenoid Valve 24VDC	SY5120-5L0Z-N7T	AIRTAC
1	Disconnect Switch - main	3LD 2203-OTK51	SIEMENS
2	#40 chain connecting link	6261K193	AEROBASE GROUP
1	SAFETY RELAY	SAFE 4	TIPSIP ELECTRONICS
2	Light Sensor - magazine area	CX3-AP-1F	Automation Direct
1	Extraction Cylinder	NCDQ2D63-45DZ	Airtac
1	IGUS TRACK - moving wire track	14020-12PZ	IGUS
1	CHAIN #40		US Tsubaki

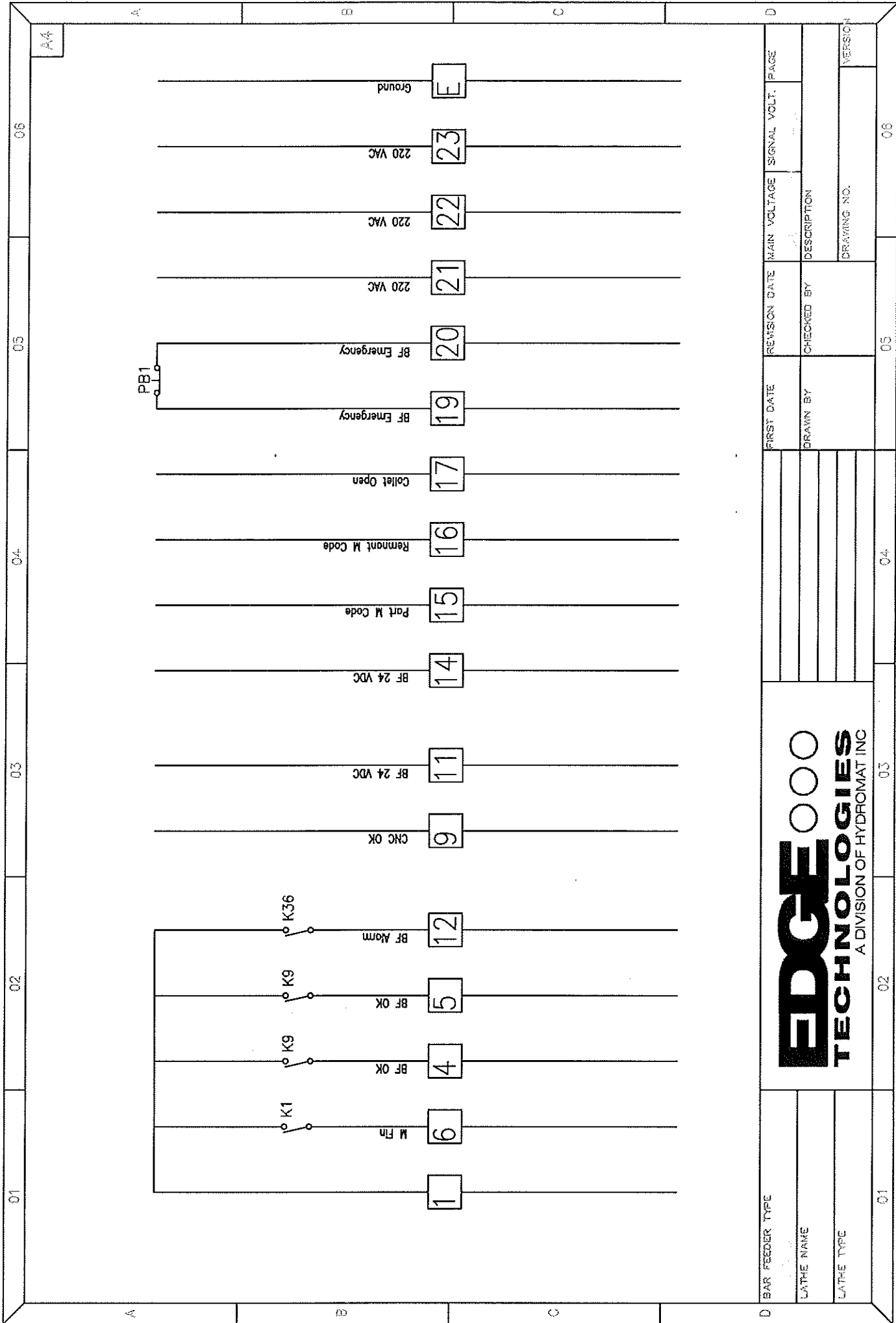
	Solid Shaft Unloader		
1	Magnet 24vdc 2" x 2" - tip	E002-0658-032	GIMATIC
1	Magnet 24vdc 1-3/8 x 1-1/2 24v - tip	E002-0575-024	GIMATIC
1	Pusher 50mm	Pusher50	EDGE
1	Channel Set 51mm	SLU-52-1069-1~8	EDGE
	Tube ID Unloader		
1	Pin Extractor - single action cylinder	A09010SD	Automation Direct
1	ID Grippers	TFA10-25	GIMATIC
1	ID Grippers	TFA14-25	GIMATIC
1	Pusher 32mm	Pusher32	EDGE
1	Channel Set 36mm	SLU-36-1069-1~8	EDGE
	Load / Unload System		
1	.875" COLLET	FCOL322223	EDGE
1	.993" COLLET	FCOL322525	EDGE
1	Pusher 32mm	Pusher32	EDGE
1	Channel Set 36mm	SLU-36-1069-1~8	EDGE

01	02	03	04	05	06	A4
Inputs						
Input	Description					
X0	Encoder Pulse "A"					
X1	Encoder Pulse "B"					
X2	Home Switch					
X3	Bar Measure Switch					
X4	Part Ejected Switch					
X5	Unload Bar Up					
X6	Unload Bar Down					
X7	Back Door Switch					
X10	M1 Motor Overload					
X11	Front Door Switch					
X12	E-Stop					
X13	Lathe Alarm					
X14	M Code Load					
X15	CNC OK					
X16	Chuck Open					
X17	M Code Return					
X18	M Code Unload					

BAR FEEDER TYPE	FIRST DATE		REVISION DATE	MAIN VOLTAGE	SIGNAL VOLT.	PAGE
LATHE NAME	DRAWN BY		CHECKED BY	DESCRIPTION		VERSION
LATHE TYPE				DRAWING NO.		
01	02	03	04	05	06	

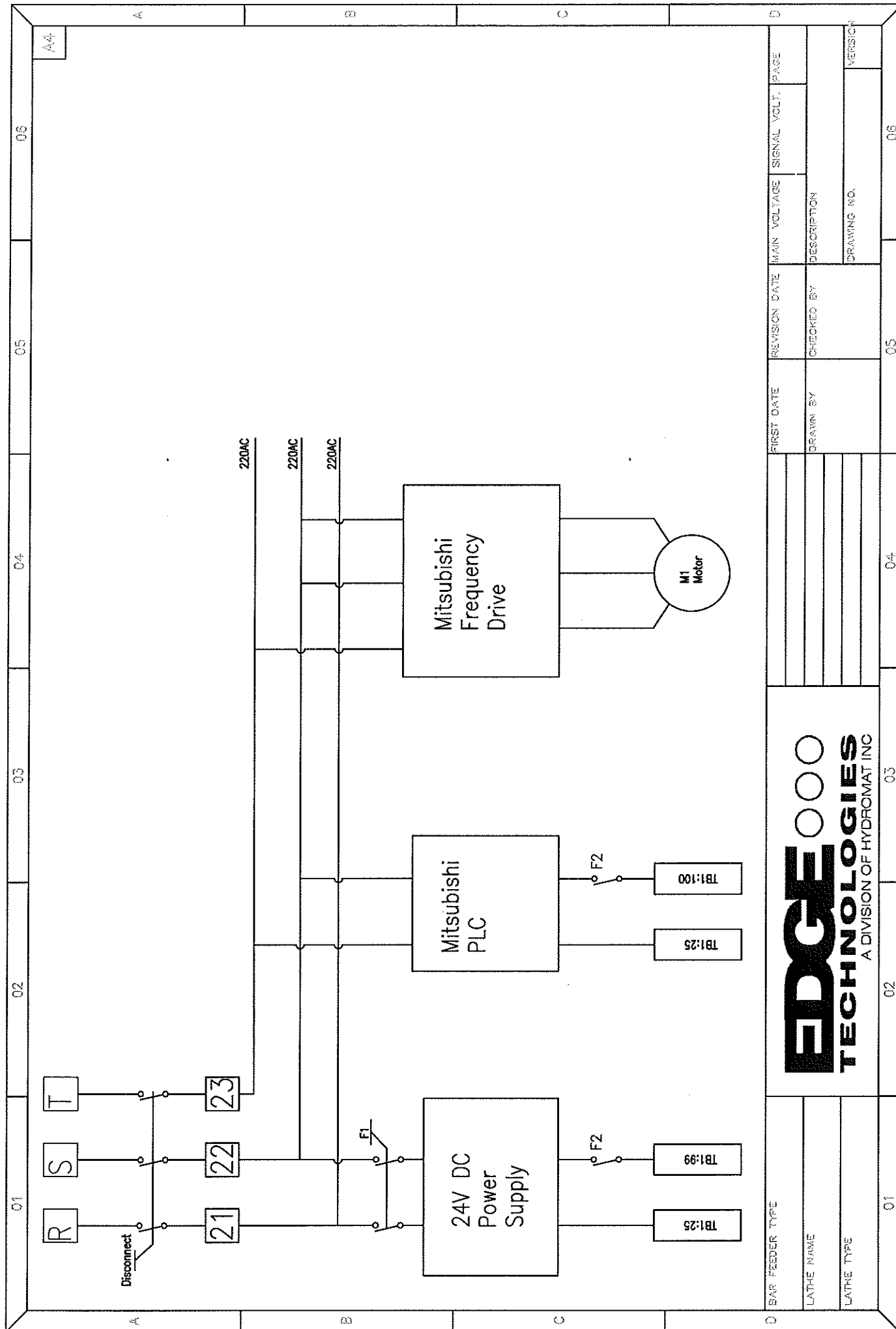


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<div> <div>Outputs</div> <table border="1"> <tr> <th>Output</th> <th>Description</th> </tr> <tr> <td>Y0</td> <td>Clutch Potentiometer Control</td> </tr> <tr> <td>Y1</td> <td>24V Clutch</td> </tr> <tr> <td>Y2</td> <td>Part Ejector</td> </tr> <tr> <td>Y3</td> <td>Spare</td> </tr> <tr> <td>Y4</td> <td>Spare</td> </tr> <tr> <td>Y5</td> <td>Cycle Start</td> </tr> <tr> <td>Y6</td> <td>Cycle Stop</td> </tr> <tr> <td>Y7</td> <td>Unloader Alarm</td> </tr> <tr> <td>Y10</td> <td>Unloader Ready</td> </tr> <tr> <td>Y11</td> <td>Motor Reverse</td> </tr> <tr> <td>Y12</td> <td>Motor Forward</td> </tr> <tr> <td>Y13</td> <td>Motor Low Speed</td> </tr> <tr> <td>Y14</td> <td>Motor Medium Speed</td> </tr> <tr> <td>Y15</td> <td>Motor High Speed</td> </tr> <tr> <td>Y16</td> <td>Part Removal Cylinder</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table> </div>							Output	Description	Y0	Clutch Potentiometer Control	Y1	24V Clutch	Y2	Part Ejector	Y3	Spare	Y4	Spare	Y5	Cycle Start	Y6	Cycle Stop	Y7	Unloader Alarm	Y10	Unloader Ready	Y11	Motor Reverse	Y12	Motor Forward	Y13	Motor Low Speed	Y14	Motor Medium Speed	Y15	Motor High Speed	Y16	Part Removal Cylinder						
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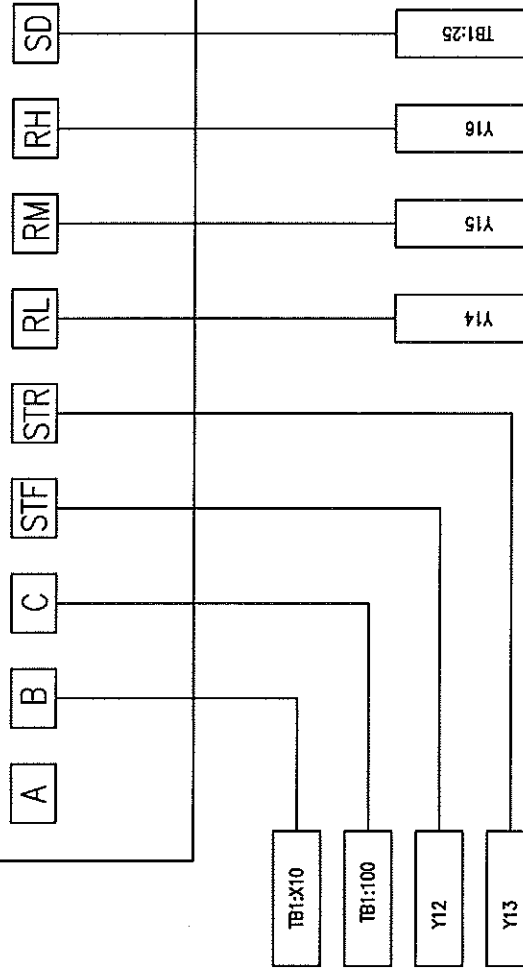
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Mitsubishi Frequency Drive



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