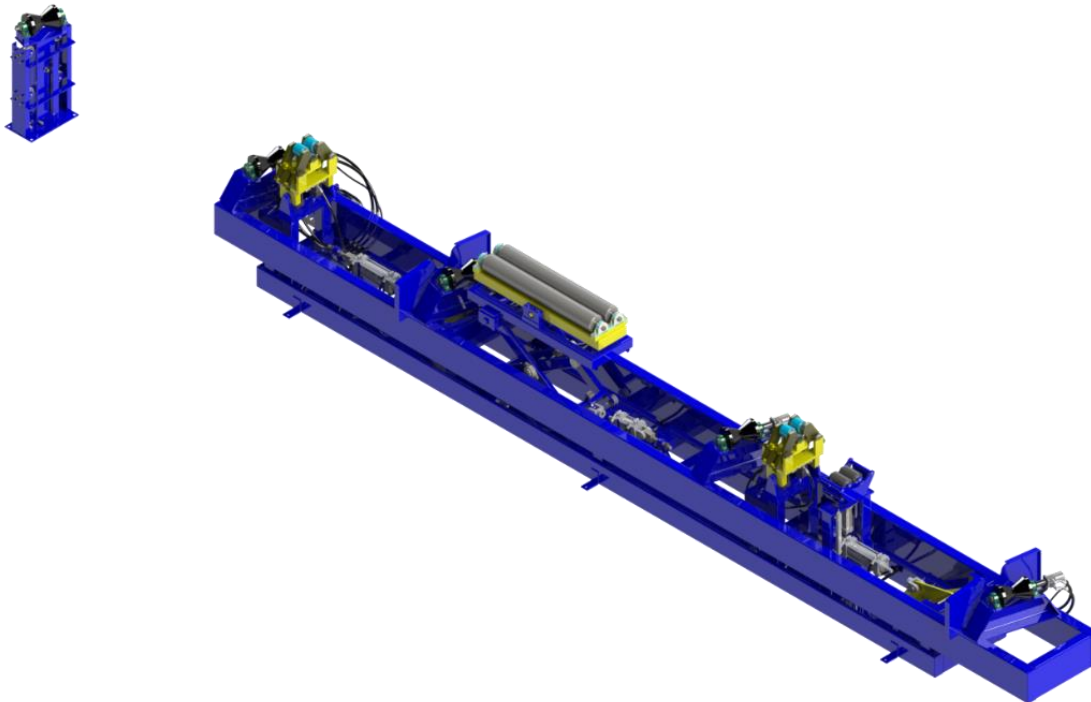


HUB CITY
IRON WORKS
Loading Conveyor

Operation and Maintenance Manual



Hub City Iron Works
700 E Texas Ave.
Rayne, LA 70578
Phone: (337) 334-6969
Fax: (337) 365-6565
www.hubcityironworks.com

Customer: _____
Location: _____
Serial #: _____
Job#: _____
Local Rep: _____
Rep Phone: _____

Table of Contents

Introduction	3
Safety	3
Machine Specifications	4
Installation	5
Equipment Placement.....	5
Initial Startup.....	7
Controls	8
Operation.....	9
Preventative Maintenance Procedure	10
Parts List	12
Loading Conveyor Frame Assembly	12
Conveyor Roller.....	13
Scissor Lift Rollers.....	14
Outer Scissor Arm.....	14
Inner Scissor Arm.....	15
Clamp Roller Base	16
Lower Clamp Roller.....	17
Roller Arm.....	18
Clamp Roller	19
Run Pop-Up Assembly	20
Run Pop-Up Roller, Upper.....	21
Run Pop-Up Roller	22
Recommended Spare Parts	23
Electrical Schematics.....	24
Hydraulic Schematic.....	33
Appendix.....	34

Service

Call: 337.334.6969

Email: servicerequest@hubcityironworks.com

Spare Parts

Call: 337.334.6969

Visit: www.hubcityironworks.com

Sales

Call: 337.334.6969

Email: sales@hubcityironworks.com

Introduction

Loading Conveyor

The Hub City Iron Works Loading Conveyor is designed to facilitate the safe and efficient loading of tubular goods for lathe operations. With features like height repeatability and safety roller clamps, its user friendly controls and functionality streamline the loading process and provide operators an intuitive solution for pipe handling during machining operations.

Safety

Hub City has provided operating procedures and safety information to ensure the wellbeing of both the operator and the equipment.

This operating manual contains important safety information - please read it thoroughly.

Safety Considerations:

- Always use proper PPE during operation of this machine.
- Never go near mechanical components while machine is in use.
- Be mindful of pinch points.
- Obey all equipment safety labels.

Safety Features Include:

- Mechanically active components are painted a high visibility yellow.
- Low oil level indicator protects machinery in the case of a hydraulic line rupture and limits environmental impact.
- Low voltage operator interface (24vdc)
- Equipment safety labels.



Machine Specifications

Standard Features

- 4' long support rollers
- Onboard PLC
- Easy to use operator interface
- Hydraulic power supply
- Hydraulically powered V-Rollers

Optional Features

- Clamp roller assemblies for higher cutting speeds
- Support rollers to handle various lengths of pipe up to Range 3

Capability

- Pipe Minimum OD: 1"
- Pipe Maximum OD: 10-3/4"
- Maximum Weight: 7,500 lbs

Specifications

- Overall length 30'-0"
- Width 2'-8"
- Frame Height 1'-10" (Lowered) 2'-11" (Raised)

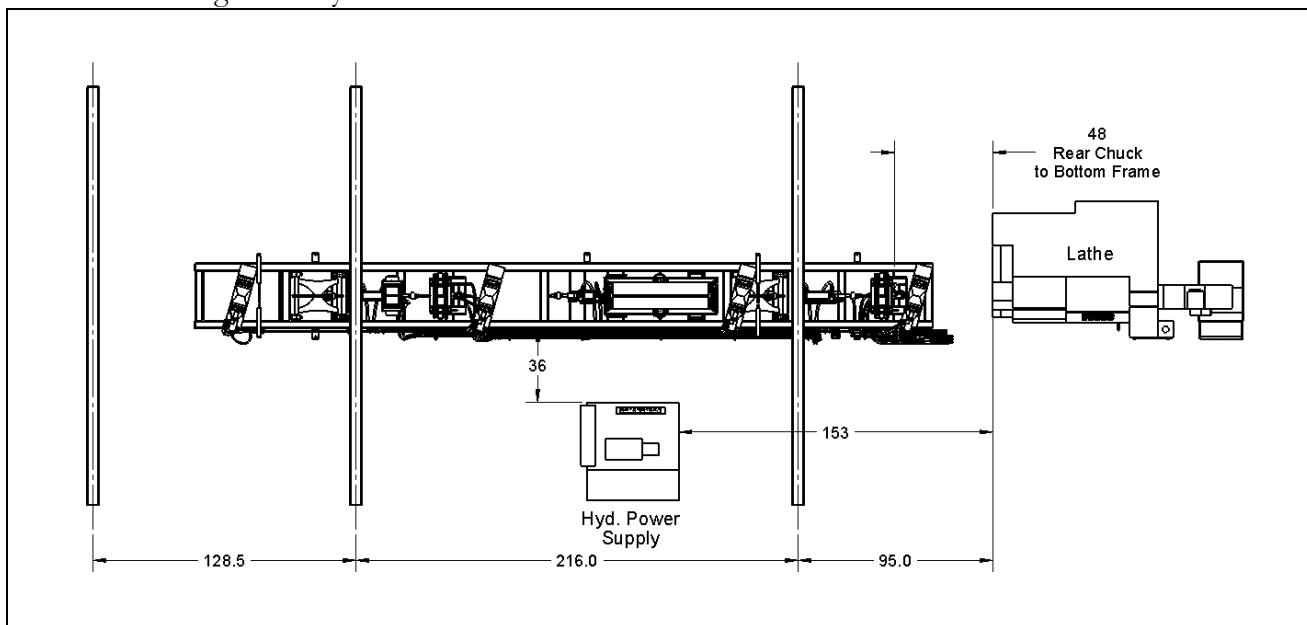
Pipe Plant Requirements

- Electrical 230/480V, 3 Phase, 60 Hz (Others available upon request)
- Compressed air N/A
- Rack height 36"- 46" (Max distance between lathe centerline and rack top is 7")

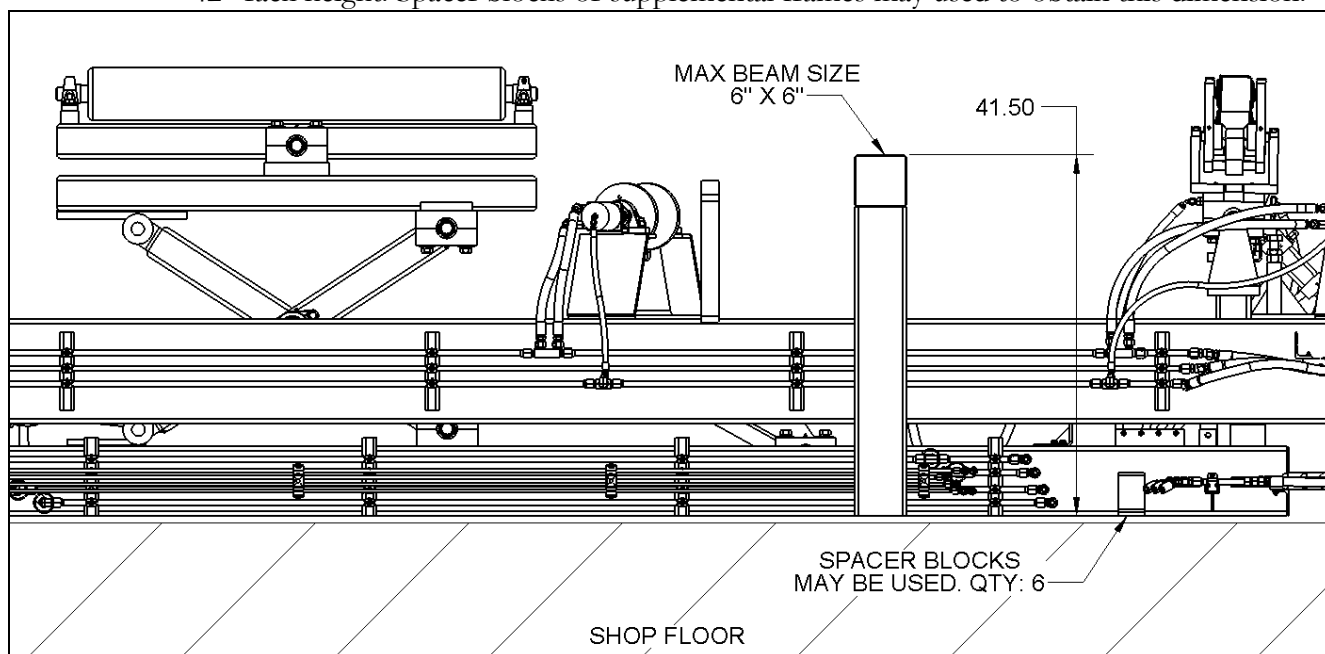
Installation

Equipment Placement

- Placement of loading conveyor and auxiliary equipment can vary among different locations. See figure below for generic layout. All dimensions are in inches.

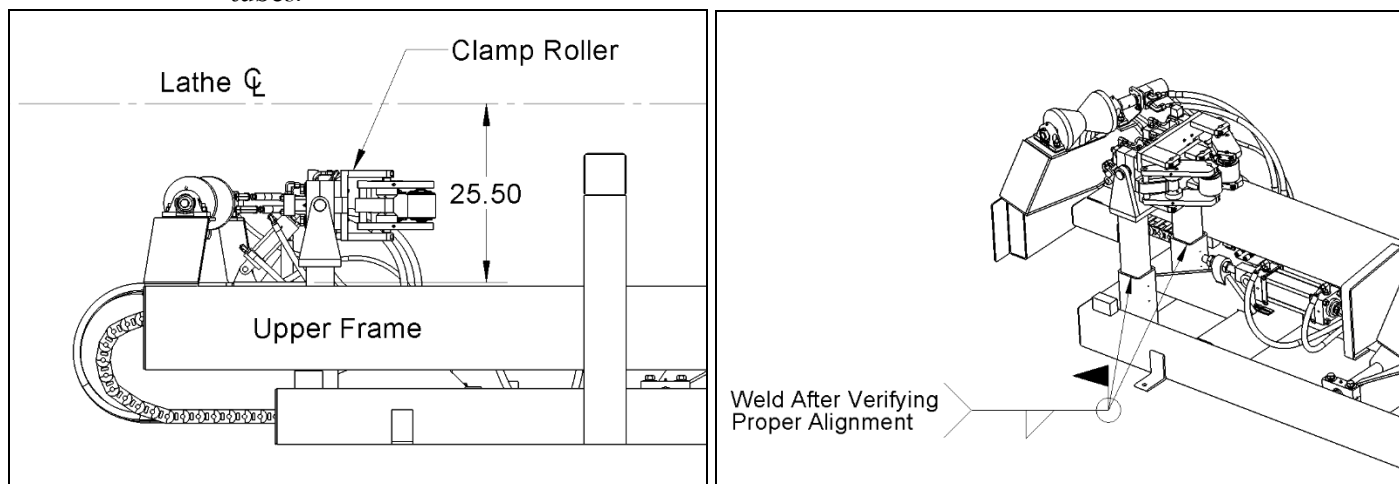


- The lathe center line should be perpendicular to the pipe racks
- After placement, equipment must be aligned properly to ensure suitable operation.
 - Loading Conveyor
 - ◆ The appropriate height must first be obtained. The bottom of the frame must be 41-1/2" below the top of steel of the pipe rack. This will allow a maximum lathe centerline height of 50" with a 42" rack height. Spacer blocks or supplemental frames may be used to obtain this dimension.

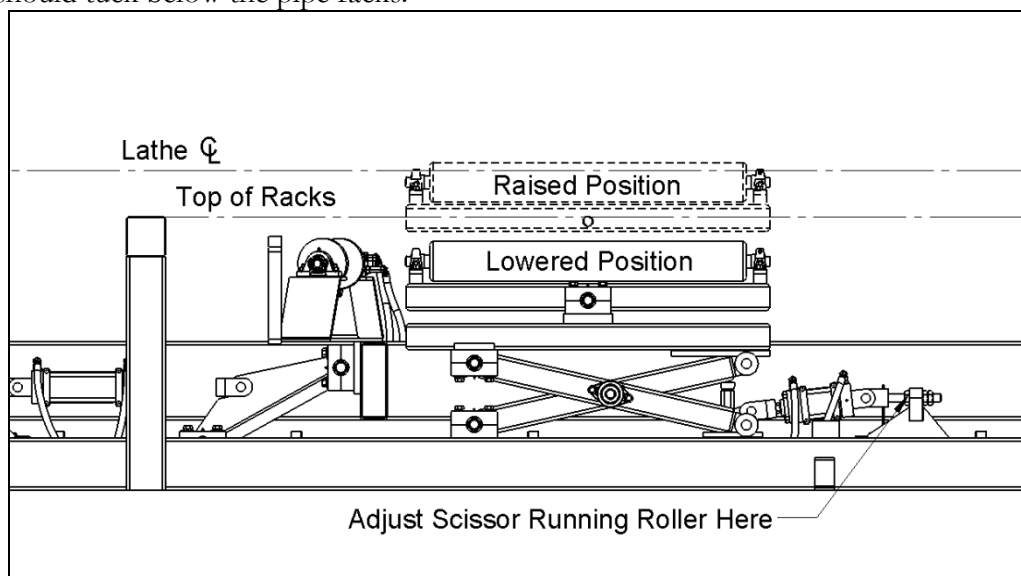


- ◆ After obtaining the correct height, the loading conveyor must be placed in line with the lathe. It is imperative that the loading conveyor frame and running roller are both in line with the lathe while in both the unloading (down) and the loading (up) position.
 - Clamp Rollers

- ◆ Set the clamp rollers using the setting bolts to the appropriate height and alignment.*
- ◆ To set the height, make sure the frame is in the lowered position and adjust the Clamp Roller so that it is 25-1/2" below the center line of the lathe.*
- ◆ After verification of alignment and proper functionality fully weld clamp roller legs to guide tubes.*



- Scissor Running Roller
 - Adjust the height of the scissor running roller with the hex nuts located on the thread rod. The rollers should at a minimum extend just above the centerline of the lathe and the tops of the rollers should tuck below the pipe racks.



- Power Supply
 - Orient power supply where convenient and accessible.
- Control Stand
 - Position control stand as desired and anchor to floor.
- Once all equipment has been field tested for alignment; tighten anchors according to manufactures specifications. All welds are to be full penetration welds according to AWS D1.1/D1.1M:2008 and inspected to clause 6.9, statically loaded connections (all material is A36 steel). The customer takes full responsibility for all field welded joints.

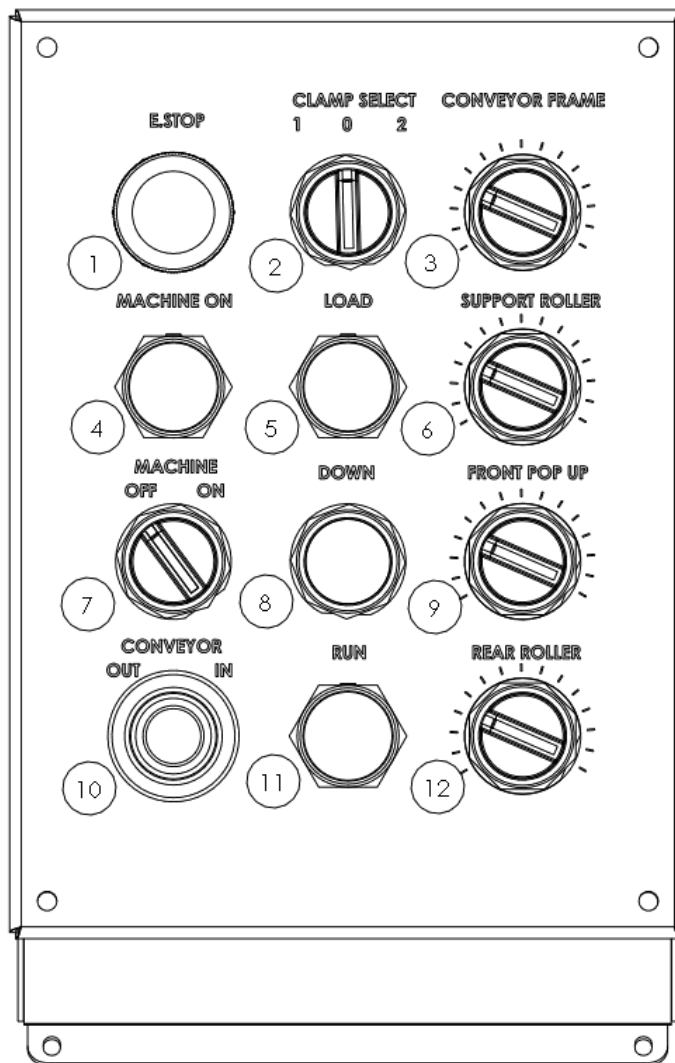
*It is best to temporarily align loading conveyor and auxiliary equipment with lathe and then perform start up procedure and verify proper alignment before permanently fixing in position.

Initial Startup

- Mechanical
 - Ensure that all hardware is secure as it may have become loose during shipping.
- Electrical
 - Ensure all electrical connections are secure.
- Hydraulic
 - Ensure that all hydraulic fittings and hoses are tightened appropriately.
 - Inspect power supply reservoir tank for any foreign material.
 - Ensure that all valves are open and secured with malleable wire.
 - Fill reservoir tank with AW32 hydraulic oil.
 - Test rotation on electrical motors by briefly turning pump on at the control head with on/off button; ensure that the rotation is clockwise viewing from the cooling fan (back) side.
 - Once rotation is verified, confirm pressure reads between 1000 - 1200psi
 - It is common for there to be loud noises upon startup coming from hydraulic pump during initial startup. Noises should dissipate within a few minutes.
 - Once system is functional and run for 5 hours check suction strainer and return filter for debris and clean as necessary.
- General Functionality
 - Test all functions of the conveyor without pipe first.
 - Ensure that the E STOP (#1) button is not depressed by twisting it. If it is depressed it should then reset.
 - Next, power on the unit (#3). The power on light (#2) will light up then the hydraulic pump will start up.
 - Select the number of clamps desired by using the clamp switch (#5).
 - Select the pipe range switch (#9) to desired position. Pipe range switch controls rack mounted support rollers. Range is loosely related to typical Range 1, 2, 3 lengths of pipe.
 - Press the frame up button (#6). The frame cylinders should actuate and bring the frame up. Next, check the conveyor height pot switch (#10) and the frame height will adjust.
 - Move the joystick (#4) left and right to control the motors.
 - Press the run button (#8). The frame should go down and the appropriate rollers should come up to handle varying lengths of pipe.
 - Test the roller height pot switch (#11, #12).
 - Press the frame up button (#6), the frame should come up and the selected rollers should retract.
 - Press the frame down button (#7), the frame should then go down.
 - Repeat cycle with different options of clamps (#5) and range selected (#9).
 - Test functionality of pipe turn-around use the joystick (#4) up and down.
 - Repeat steps with the use of varying lengths and sizes of pipes to ensure complete operation.

Controls

Standard Loading Conveyor Controls Layout (Standard layout shown – Specific Control Layout May Change)



	<u>Function</u>
1	Emergency Stop
2	Clamp Selector Switch
3	Conveyor Frame Elevation
4	Power On Light
5	Load Button
6	Support Roller Elevation
7	Machine On Switch
8	Down Button
9	Front Pop Up Elevation (If equipped)
10	Conveyor In/Out Controls
11	Run Button
12	Rear Roller Elevation

Operation

- Pull up on ESTOP (#1) button to ensure that it is not engaged.
- Turn power on (#7), power light (#4) will come on green to indicate power on.
- Select the desired number of clamps (#2).
 - It is up to the operator to determine appropriate selections as pipe dimensions and concentricity may vary.
- Load a single joint of pipe onto v-rollers and press Load Button (#5).
- Adjust height of frame by controlling conveyor frame adjustment (#3).
- Bring the pipe into the lathe by moving the joystick (#10) right.
- Once the operator has clamped down on the pipe using the lathe chucks, press the run button (#11).
- Adjust the height of the support rollers with the adjustment switches (#6, #12) to ensure pipe alignment. Use extreme caution when adjusting the rollers while spinning the joint of pipe. If not cautious, the operator can cause the pipe to come loose causing serious injury or death.
- After machining operations have finished and the pipe has stopped spinning, disengage the clamps.
- Press the Load Button (#5) to bring the frame back up.
- Move the joystick (#10) left to bring the pipe out of the lathe.
- Press the frame down button (#8).
- Continue to the next joint of pipe, if it is the same size no height adjustments will have to be made during the loading operation.

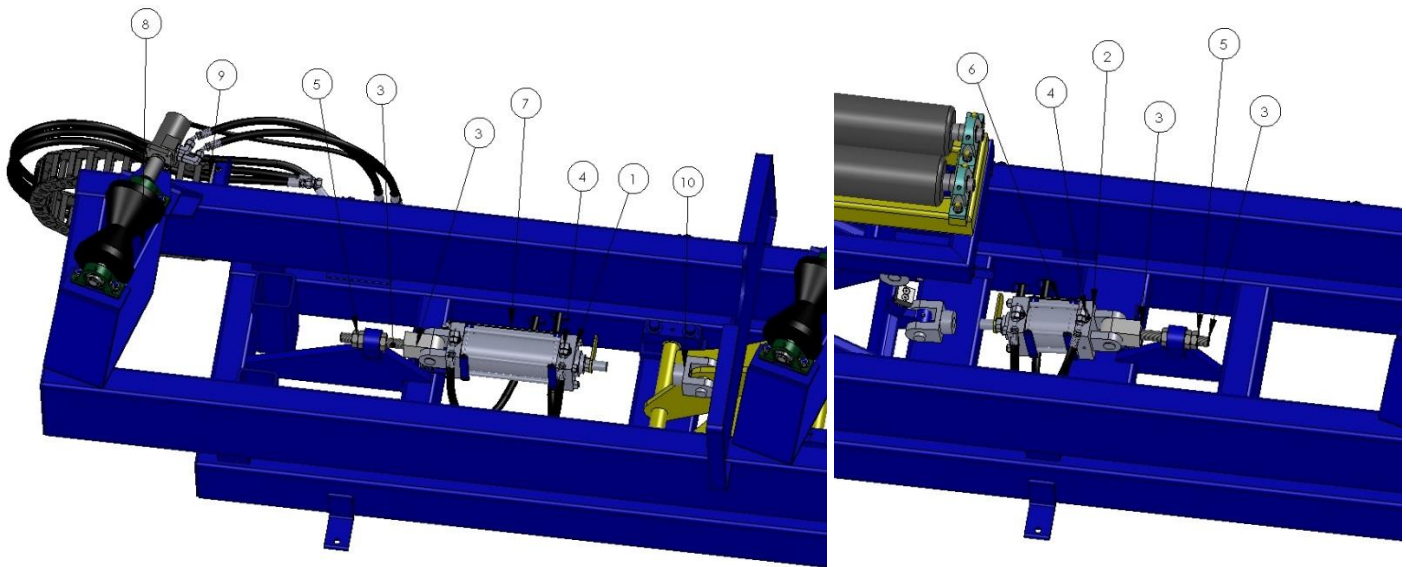
Preventative Maintenance Procedure

		Loading Conveyor Daily Preventative Maintenance								
Company:										
Location:										
Machine No.:										
Week of:										
Instructions:		Inspect each item at the start of each shift - initial next to block after task is complete For more detailed information consult operators manual.								
Day	Inspect drive and idle wheel stations (1)v-rollers for excessive wear (2)bearings for wear and loose or missing bolts; grease fittings (3)motor for leaks and loose or missing bolts (4)check that it functions properly	Inspect top and lower frames (1)crack welds on frame, pad eyes, and cross members (2)cylinder for leaks and jam nuts tight (3)check that it functions properly	Inspect scissor support rollers (1)rollers for excessive wear (2)bearing and grease (3)travel of scissors fully extends and goes all the way down (4)loose parts or bolts (4)check the it functions properly (5)inspect that the sensor is working	Inspect clamps (1) rollers and bearings; grease (2)cylinders for leaks; mouting bolts tight (3)clamp moves correctly and holds in up position	Inspect Range 3 popup (1)rollers for excessive wear (2)inspect and grease bearings (3)cylinder for leaks and loose bolts (4)function of popup and will hold in up position (5)inspect sensor is working properly	Inspect electric panels (1)inspect for loose wires and connections	Inspect control head (1)switches and joystick buttons work properly	inspect power supply (1)check for loose fittings and leaks (2)low oil switch functions correctly (3)get oil sample		
1										
2										
3										
4										
5										
6										
7										
Comments:										

		Loading Conveyor Yearly Preventative Maintenance									
Company:											
Location:											
Machine No.:											
Week of:											
Instructions:											
Inspect each item at the start of each shift - initial next to block after task is complete											
For more detailed information consult operators manual.											
Year	Power Supply (1) Drain hydraulic reservoir and clean with suitable solvent (2) Remove suction strainer and clean with solvent (3) Change hydraulic filters	Machine Alignment (1) Verify machine is aligned properly. Correct if necessary.									
Comments:											

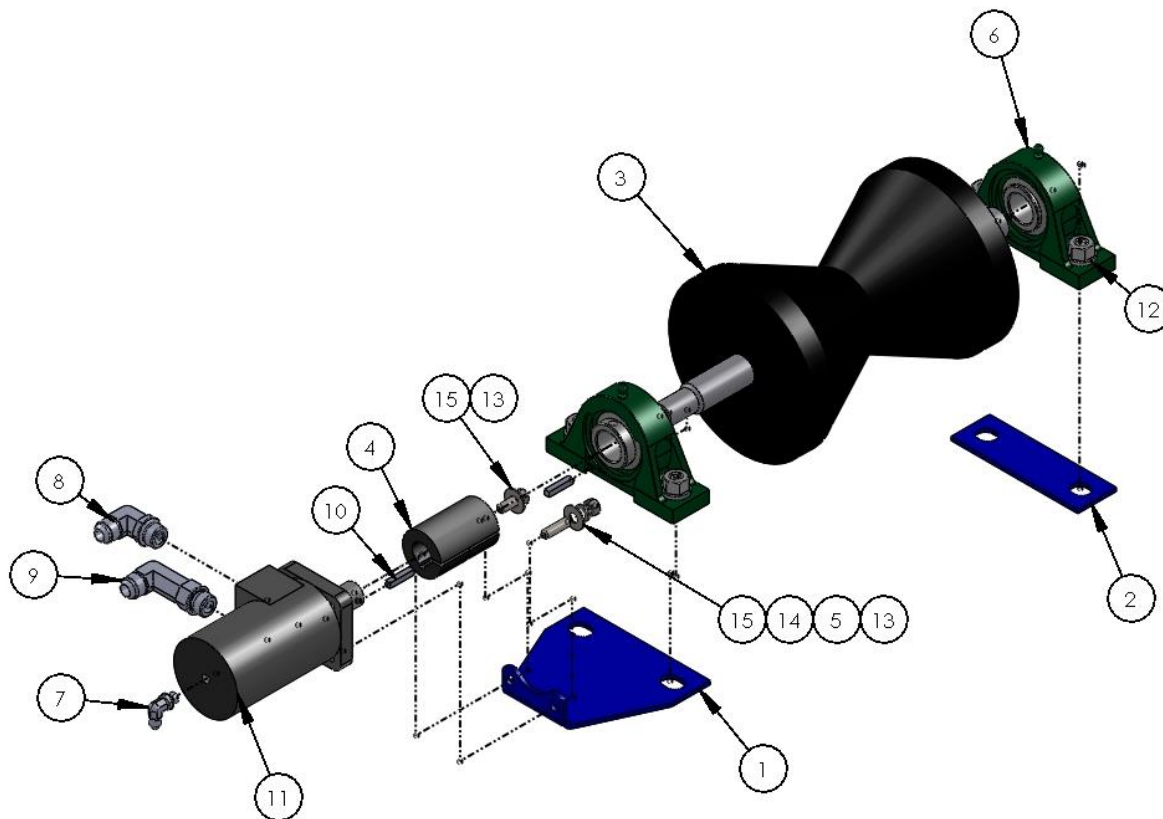
Parts List

Loading Conveyor Frame Assembly



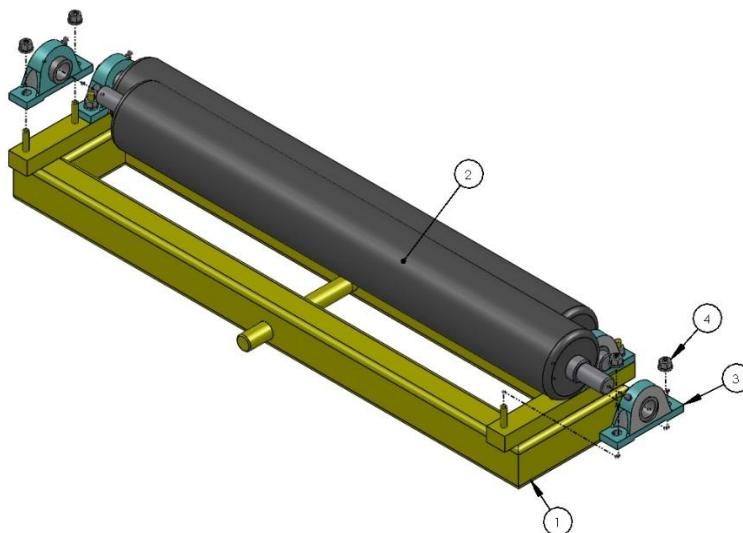
Item #	Part #	Description	Quantity
1	15126	SHEFFER HYDRAULIC CYLINDER, P/N 4HHC10	2
2	15133	SHEFFER HYDRAULIC CYLINDER, P/N 4HHC4	1
3	15291	ROD, EYE, REF 201116 1.25"	3
4	15741	# 12 MSAE X # 10 MJIC 90° ELBOW, (2062-12-10)	6
5	16523	NUT, JAM, 1.25" NF	9
6	16724	BALLUFF LINEAR POSITION SENSOR, 100mm, BIW1-A310-M0100-P1-S115	1
7	16725	BALLUFF LINEAR POSITION SENSOR, 300mm, BIW1-A310-M0300-P1-S115	1
8	24365	CARRIER, OPEN HINGED CABLE AND HOSE 3.94	1
9	24366	BRACKET, PAIR, MOUNTING HINGED FOR CABLE & HOSE	1
10	29120	ROD CLEVIS, SHEFFER P/N CLS A11250	3

Conveyor Roller



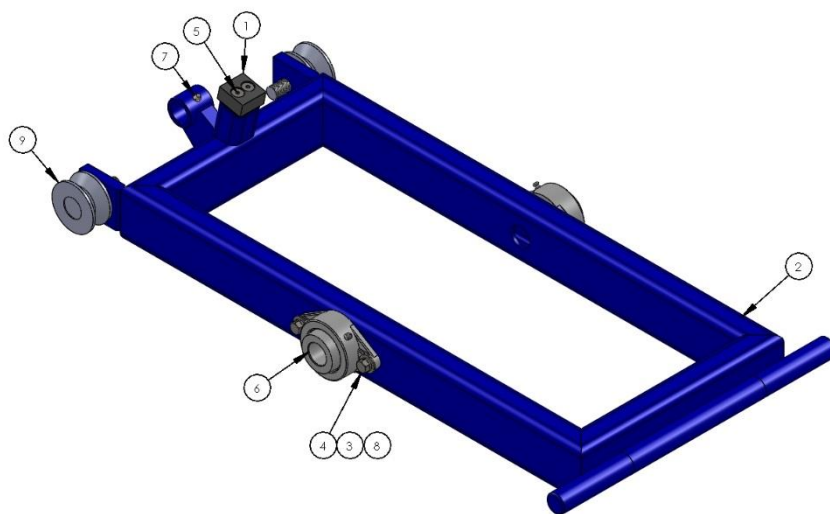
Item #	Part #	Description	Quantity
1	101-100-026-018	HYDRAULIC MOTOR MOUNT	1
2	101-100-033-018	Conveyor Bearing Spacer Shim	1
3	24147	7.625 OD V-ROLLER	1
4	14000	1" x 3" RIGID SHAFT COUPLING	1
5	14145	WASHER, LOCK, .375"	2
6	14615	SEALMASTER NP20 1-1/4"	2
7	15612	# 4 MSAE X # 4 MJIC 90° ELBOW, (2062-4-4)	1
8	15739	# 10 MSAE X #10 MJIC 90° ELBOW, (2062-10-10)	1
9	15790	# 10 MSAE X # 10 MJIC LONG 90° ELBOW	1
10	16298	1/4" x 1-1/4" KEY	2
11	16391	CHARLYNN HYD MOTOR P/N - 101-2435009 (HT)	1
12	16482	NUT, FLANGE , 1/2"	4
13	16487	NUT, HEX, .375" NC	2
14	17162	SET SCREW, .375"-16 x 1.25"	2
15	17656	WASHER, FLAT, .375"	2

Scissor Lift Rollers



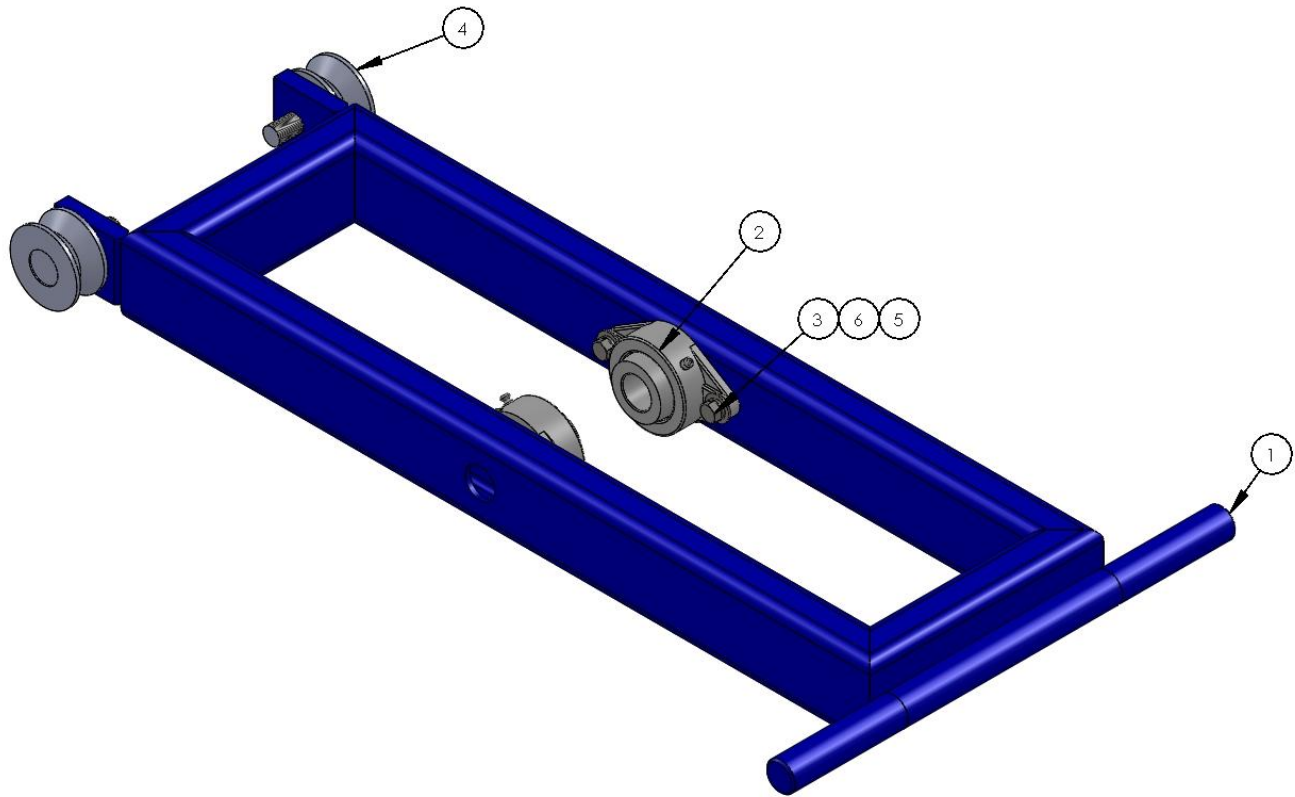
Item #	Part #	Description	Quantity
1	101-700-013-00	ROLLER SUPPORT FRAME	1
2	13634	4' RUBBER ROLLER UNIT	2
3	14614	PILLOW BLOCK BEARING, NP-24	4
4	16482	NUT, FLANGE , 1/2"	8

Outer Scissor Arm



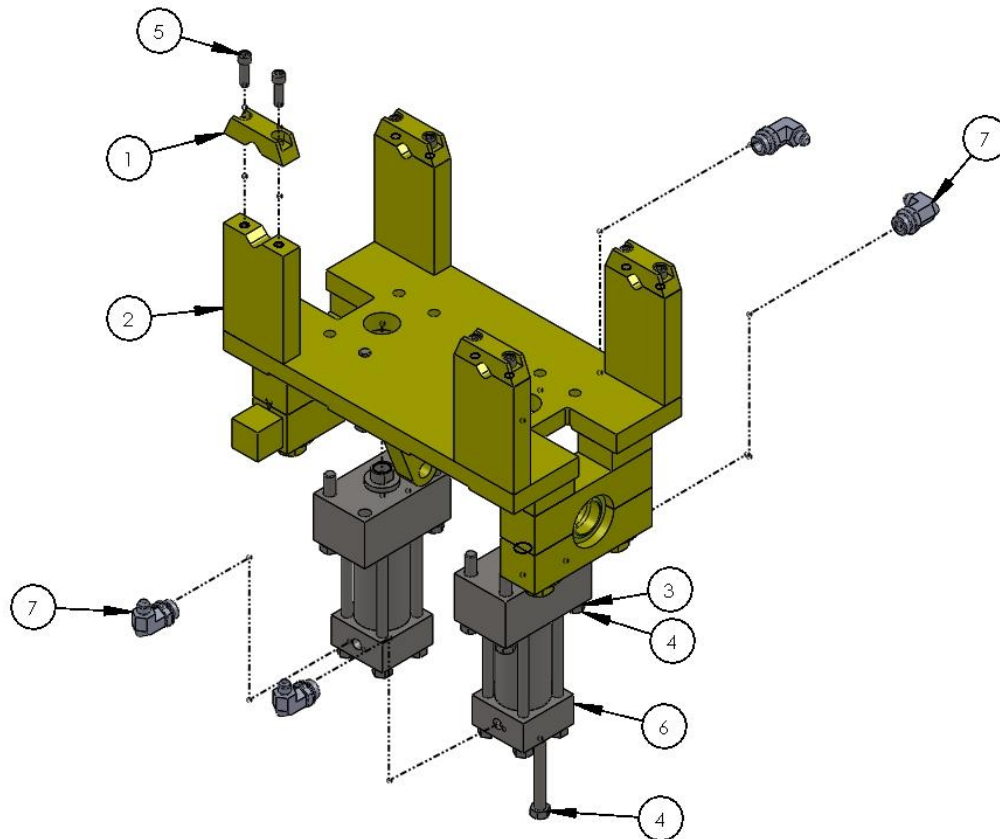
Item #	Part #	Description	Quantity
1	26307	SCISSOR STOP RUBBER	1
2	101-700-011-00	OUTSIDE SCISSOR ARM	1
3	14140	WASHER, LOCK, .50"	4
4	14405	BOLT, HHCS, .50" X 1.25" NF GR8	4
5	14479	BOLT, FHSCS, .375" X 1.50" NC	2
6	14597	SIDE MOUNT BEARING MCMaster 3756T7	2
7	16086	GREASE ZERK, 1/8 NPT	1
8	17649	WASHER, FLAT, .50"	4
9	23389	SS TRACK ROLLERS, PCI P/N VTR-3.50-SS	2

Inner Scissor Arm



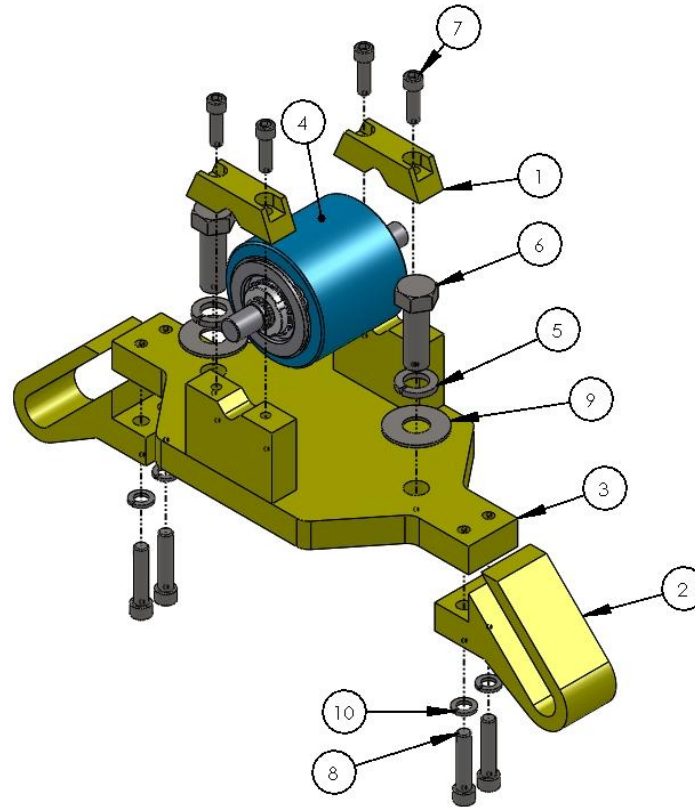
Item #	Part #	Description	Quantity
1	101-700-009-00	INSIDE SCISSOR ARM FRAME	1
2	14597	SIDE MOUNT BEARING MCMaster 3756T7	2
3	14405	BOLT, HHCS, .50" X 1.25" NF GR8	4
4	23389	SS TRACK ROLLERS, PCI P/N VTR-3.50-SS	2
5	17649	WASHER, FLAT, .50"	4
6	14140	WASHER, LOCK, .50"	4

Clamp Roller Base



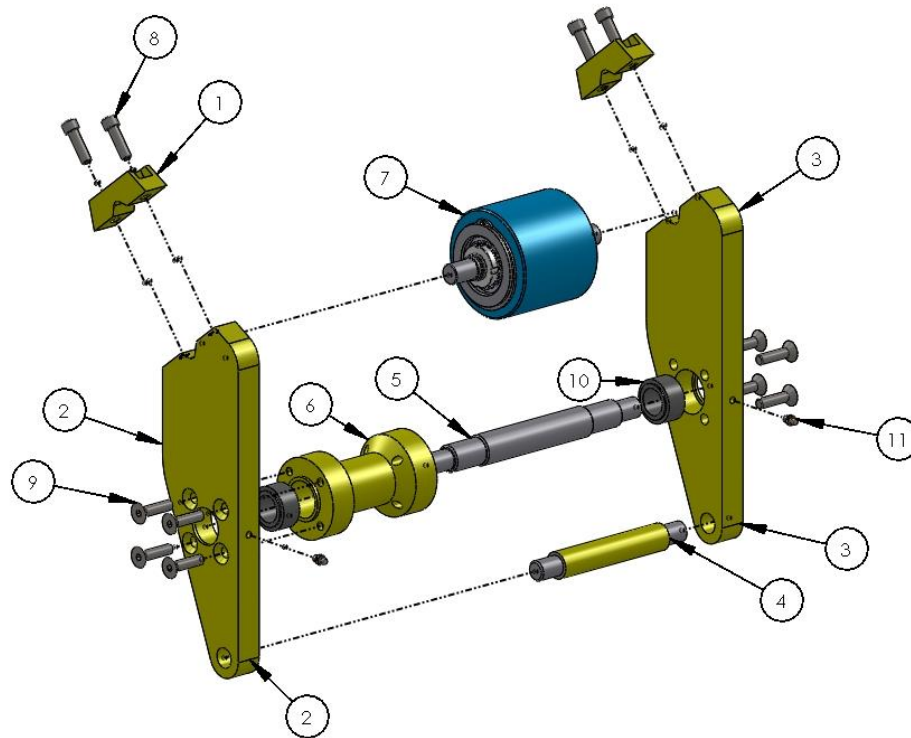
Item #	Part #	Description	Quantity
1	101-400-012-018	MOUNTING CAP	4
2	101-700-015-00	SELF CENTERING CLAMP ASSEMBY	1
3	14140	WASHER, LOCK, .50"	8
4	14361	BOLT, HHCS, .50" X 3.50"	8
5	14449	BOLT, SHCS, .375"-16 X 1.25" NC	8
6	15128	HH_FF_0200_0100 3 STR	2
7	15848	#10 MSAE X #6 MJIC 90° ELBOW , 2062-10-6, (6-10_c5ox-s)	4

Lower Clamp Roller



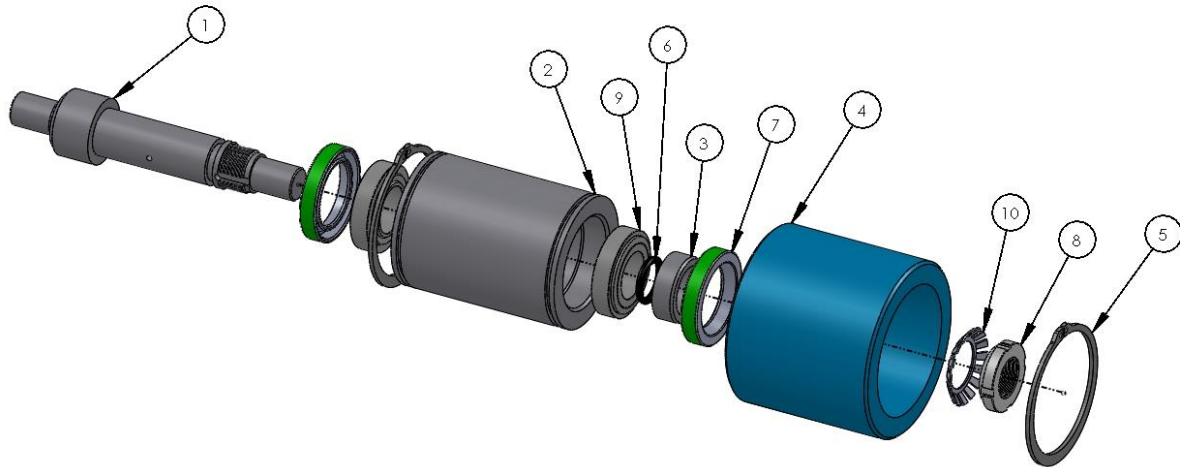
Item #	Part #	Description	Quantity
1	101-400-012-018	MOUNTING CAP	2
2	101-400-028-018	WEDGE PLATE WING GUIDE	2
3	101-700-016-00	LOWER CLAMP FABRICATION	1
4	101-701-005-00	CLAMP ROLLER WHEEL	1
5	14133	WASHER, LOCK, .75"	2
6	14411	BOLT, HHCS, .75" X 2.25" NF GR8	2
7	14449	BOLT, SHCS, .375"-16 X 1.25" NC	4
8	14453	BOLT, SHCS, .4375" X 2" NC GR8	4
9	17653	WASHER, FLAT, .75"	2
10	17668	WASHER, LOCK, .4375"	4

Roller Arm



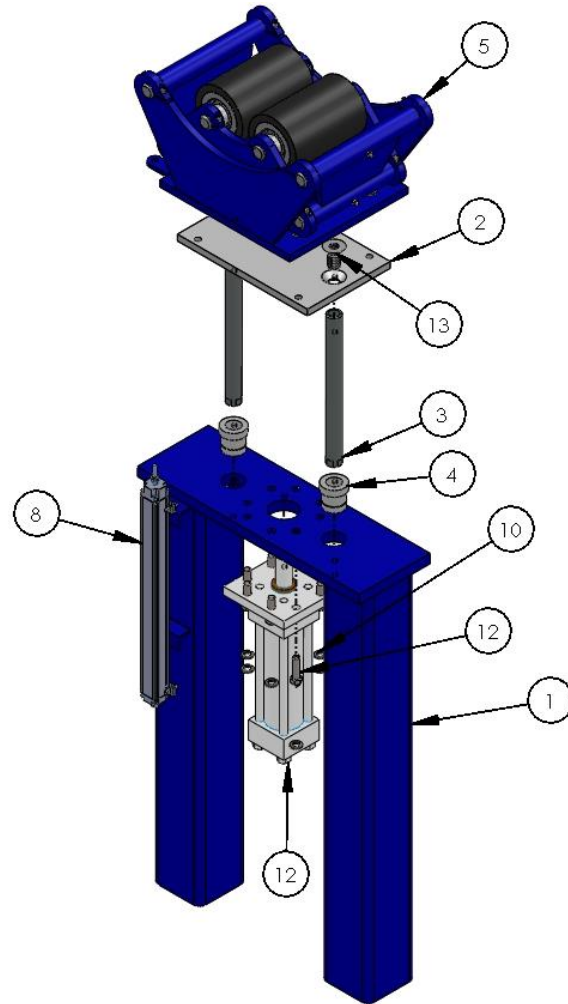
Item #	Part #	Description	Quantity
1	101-400-012-018	MOUNTING CAP	2
2	101-400-016-018	ROLLER PIVOT ARM (RIGHT)	1
3	101-400-017-018	ROLLER PIVOT ARM (LEFT)	1
4	101-400-019-012	SPACER SHAFT	1
5	101-400-020-012	PIVOT SHAFT	1
6	101-400-021-010	PIVOT SPACER	1
7	101-701-005-00	CLAMP ROLLER WHEEL	1
8	14449	BOLT, SHCS, .375"-16 X 1.25" NC	4
9	14479	BOLT, FHSCS, .375" X 1.50" NC	8
10	14644	SPHERICAL BEARING, AURORA GEZ100ES	2

Clamp Roller



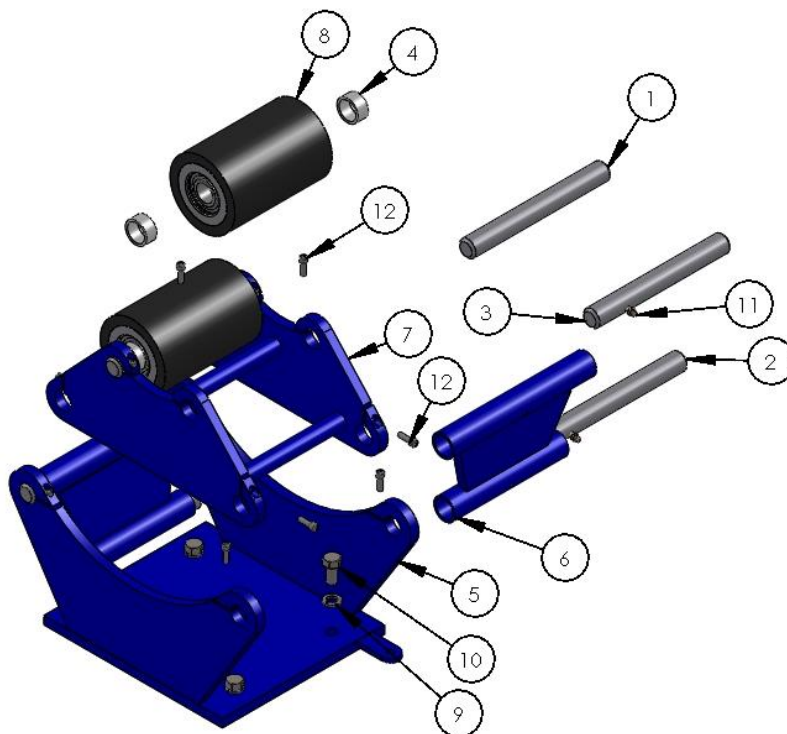
Item #	Part #	Description	Quantity
1	13871	CLAMP ROLLER SHAFT	1
2	13873	CLAMP BEARING HOUSING	1
3	13876	CLAMP ROLLER SHAFT SPACER	1
4	23890	NYLON - ROLLER	1
5	17054	3" EXTERNAL RETAINING RING	2
6	17080	PARKER O-RING, No. 2 - 211	1
7	17186	OIL SEAL, SKF-14864	2
8	17483	TIMKEN LOCK-NUT 0.9688-32 TPI	1
9	17484	TIMKEN 200708 22 (MC MASTER # 6678K130)	2
10	23462	TIMKEN, LOCK WASHER	1

Run Pop-Up Assembly



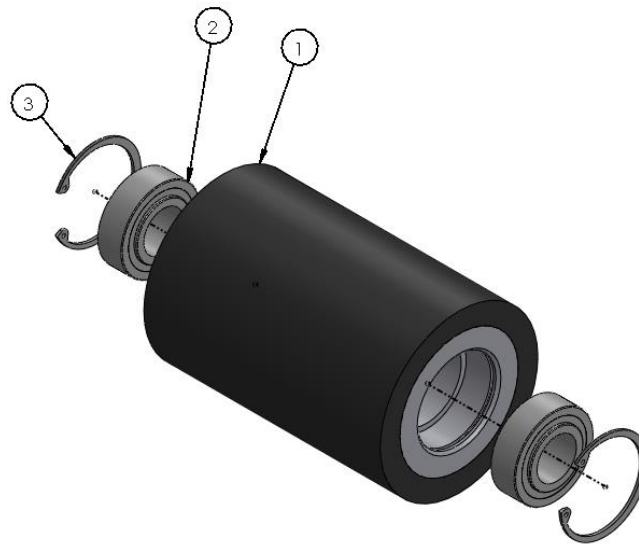
Item #	Part #	Description	Quantity
1	101-700-025-00	RANGE 3 ROLLER SUPPORT	1
2	125-100-005-018	GUIDE PLATE	1
3	125-100-006-047	GUIDE ROD	2
4	125-100-011-XXX	GUIDE ROD SLEEVE	2
5	125-701-005-00	ROLLER ASSEMBLY	1
6	14327	BOLT, HHCS, .4375" X 1.50" NC GR5	8
7	14476	BOLT, SHCS, 10-24 X .75"	4
8	16725	BALLUFF LINEAR POSITION SENSOR, 300mm, BIW1-A310-M0300-P1-S115	1
9	17056	1.5 EXTERNAL RETAINING RING, (98410A139)	2
10	17668	WASHER, LOCK, .4375"	8
11	17669	WASHER, LOCK, #10	4
12	24348	2" BORE X 8" STROKE WITH BOOT	1
13	27881	BOLT, FHSCS, .75"-16 X 1.5" NF	3

Run Pop-Up Roller, Upper



Item #	Part #	Description	Quantity
1	125-100-016-010	ROLLER SHAFT	2
2	125-100-020-010	TOP SUPPORT SHAFT	2
3	125-100-021-010	BOTTOM SUPPORT SHAFT	2
4	125-100-022-901	ROLLER SPACER	4
5	125-700-005-00	ROLLER BASE BRACKET	1
6	125-700-006-00	TRANSITION ARM	2
7	125-700-007-00	ROLLER BRACKET SWING	1
8	125-701-004-00	ROLLER WITH BEARINGS	2
9	14140	WASHER, LOCK, .50"	4
10	14358	BOLT, HHCS, .50" X 1" NC GR5	4
11	16082	GREASE FITG, .25"-28 X .75"	4
12	28240	BOLT, SHCS .25 - 20 x .75" NC	12

Run Pop-Up Roller



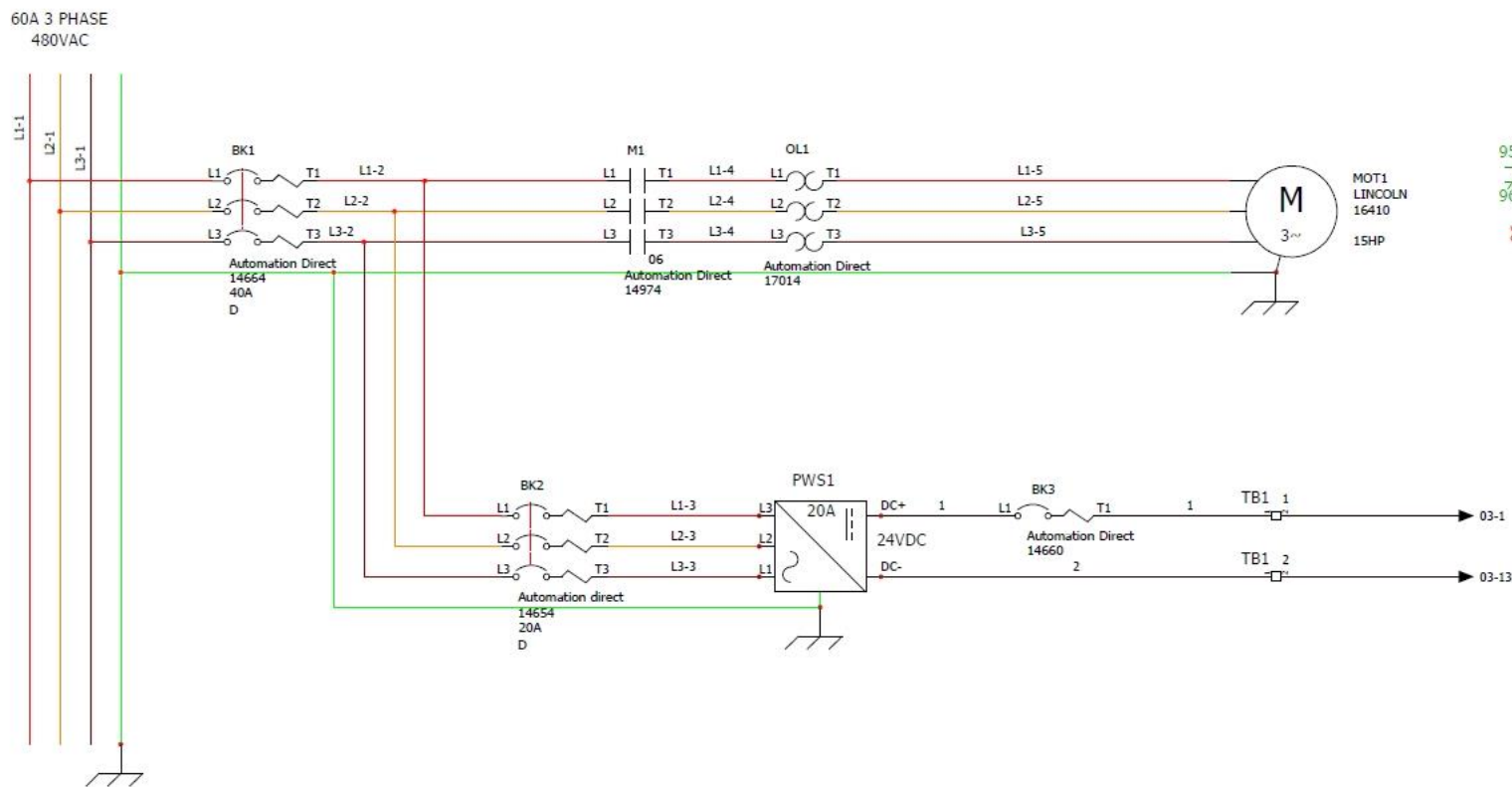
Item #	Part #	Description	Quantity
1	125-700-008-00	ROLLER WITH RUBBER	1
2	24347	SHAFT	2
3	21483	INTERNAL RETAINING RING	2

Recommended Spare Parts

Level A Items (Stocked On Site)		
Part #	Description	Qty
16725	LINEAR POSITION SENSOR	1
16724	LINEAR POSITION SENSOR	1
16391	HYD MOTOR	2
24147	7.625 OD V-ROLLER	2
23890	NYLON CLAMP ROLLER	3
14000	RIGID SHAFT CPLG	2
16746	POWER SUPPLY, 460V-230V/24VDC POWERSUPPLY	1
14974	CONTACTOR, 24VDC COIL 20HP 32A	1
17014	THERMAL OVERLOAD RELAY (18-26A)	1
16835	PLC, 60I/O CP1L	1
16372	PLC EXPANSION, 4 ANALOG /DIGITAL UNIT	1
16724	BALLUFF SENSOR TRANSDUCER, 100MM 24VDC	1
16725	BALLUFF SENSOR TRANSDUCER, 300MM 24VDC	1
14923	BALLUFF PLUG, 8PINS PLUG	1
Level B Items (1-3 Day Delivery)		
13634	4' RUBBER ROLLER UNIT	2
14614	PILLOW BLOCK BRNG 1.5	4
14615	PILLOW BLOCK BRNG 1.25	4
23389	SS TRACK ROLLERS	2
17309	JOYSTICK, 2 WAYS SPRING RETURN JOYSTICK	1
17002	RELAY, 11 PINS 3 POLE 24VDC COIL	1
17001	RELAY, 8 PINS 2 POLE 24VDC COIL	1
16726	POTENTIOMETER, 1K POTENTIOMETER	1
Level C Items (0-120 Day Delivery)		
15133	4"	1
15126	4" X 10" CYLINDER	1
24348	2" X 8" CYLINDER	1
15128	2" X 4" CYLINDER	1
15291	ROD EYE 1.25"	1
29120	ROD CLEVIS 1.25"	1
17422	PUSH BUTTON, E.STOP BUTTON 24V LIGHT	1
16309	PILOT LIGHT, 24V GREEN PILOT LIGHT	1
13989	SELECT SWITCH, 2 POSITION SWITCH	1
17407	SELECT SWICTH, 3 POSITION MAINTAINED	1
17377	PUSH BUTTON, AMBER LIGHTED PUSH BUTTON	1
13988	PUSH BUTTON, RED PUSH BUTTON	1
17376	PUSH BUTTON, GREEN LIGHTED PUSH BUTTON	1
17036	RESISTOR, 1.5K 1/2 WATT	1

Electrical Schematics

Power Supply Schematic



POWER SCHEMATIC

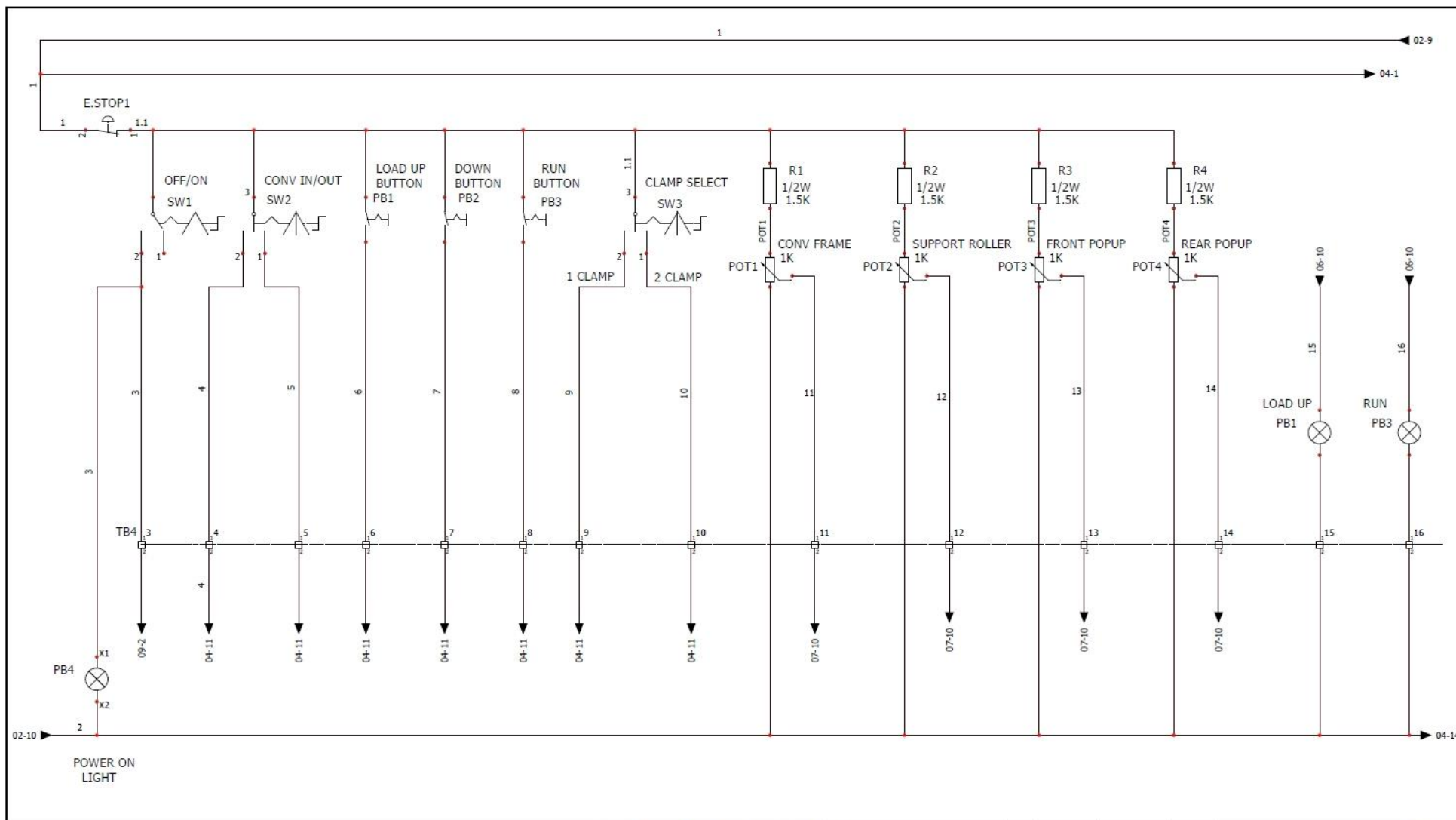
CONTRACT N° :

LOCATION: L1

PLC ENCLOSURE

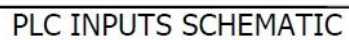
REV.	DATE	NAME	CHANGES	REVISION
0	2/23/2015	jgonzalezjaim		0
User data 2				SCHEME
				02

Control Head

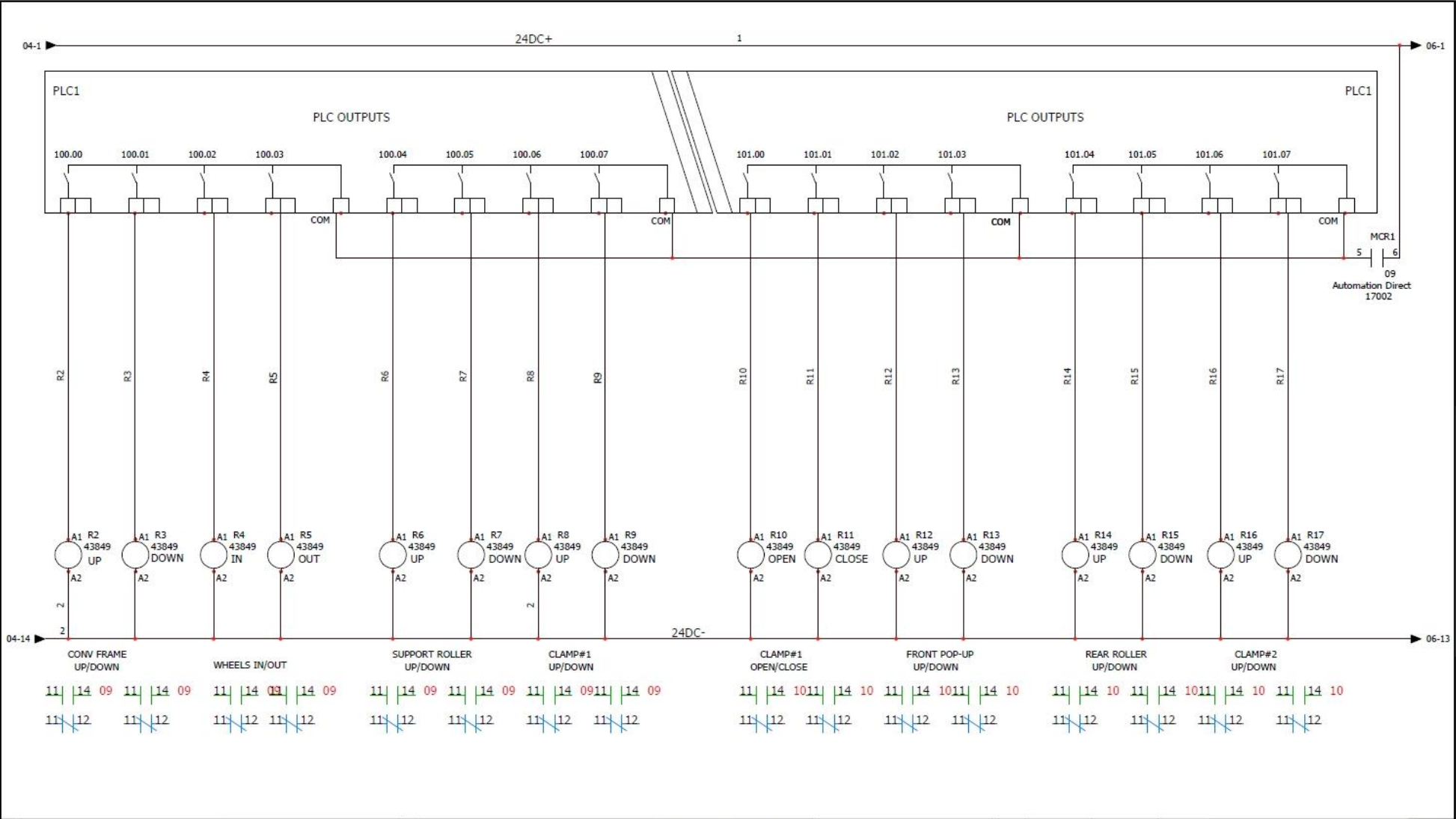


CONTROL HEAD SCHEMATIC

CONTRACT N° :	LOCATION: L2	CONTROL HEAD	User data 2	CHANGES	REVISION
					0
					SCHEME
					03

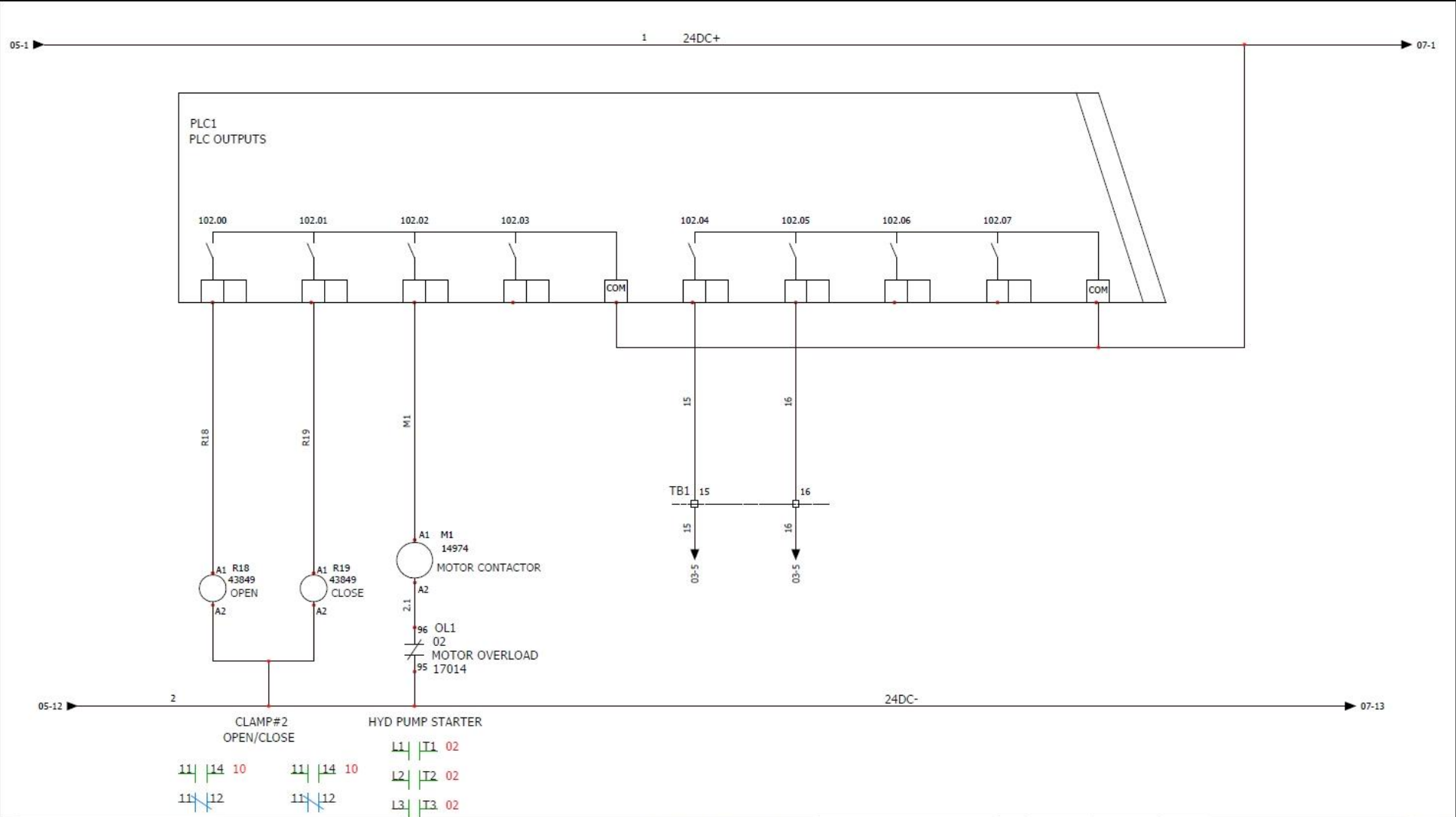
Page 26 of 34

PLC Outputs #1



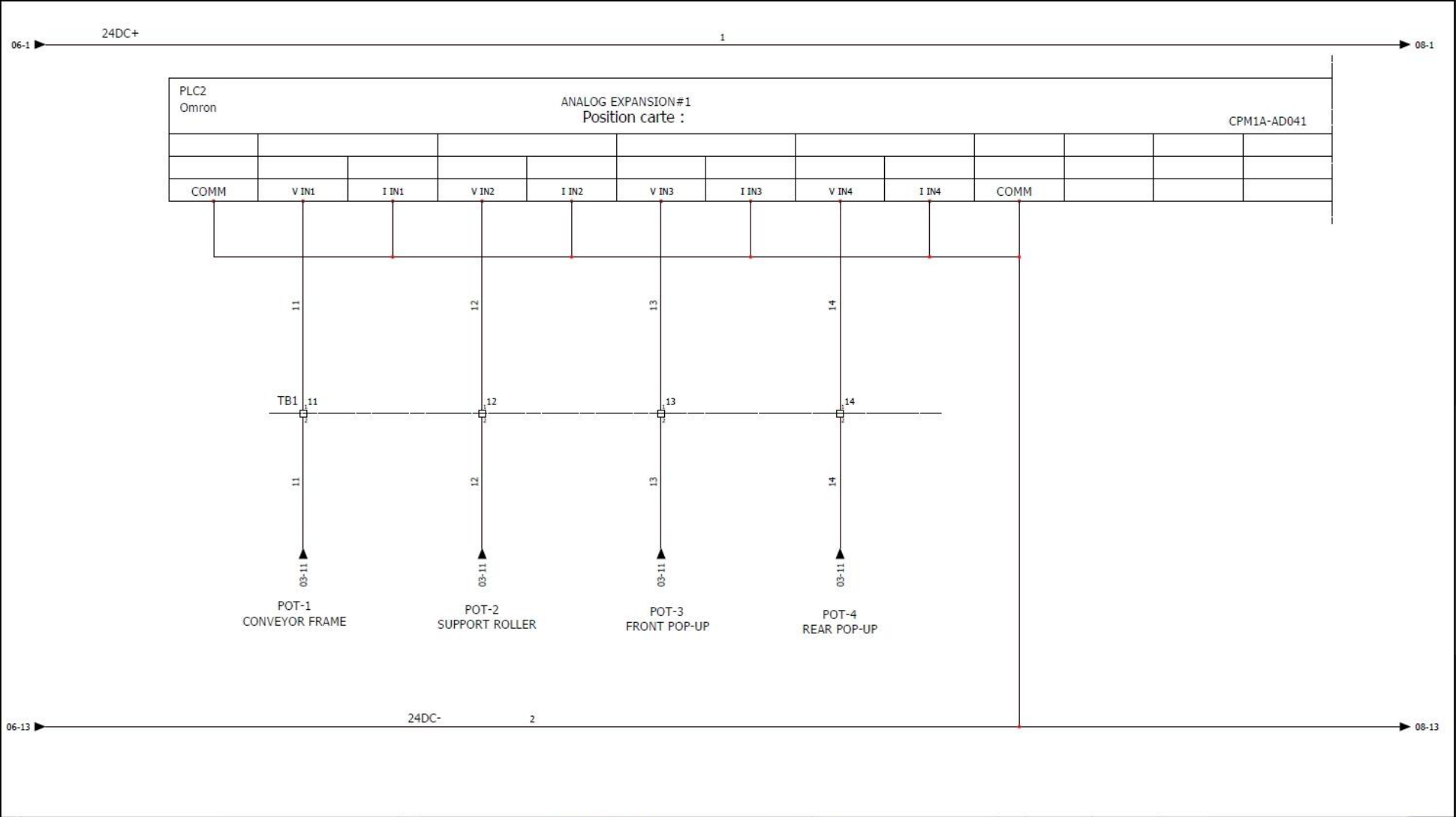
	PLC OUTPUTS-1								REVISION
									0
					0	2/23/2015	ligonzalezajame		
					REV.	DATE	NAME	CHANGES	SCHEME
CONTRACT N° :	LOCATION:	L1	PLC ENCLOSURE		User data 2				05

PLC Outputs #2



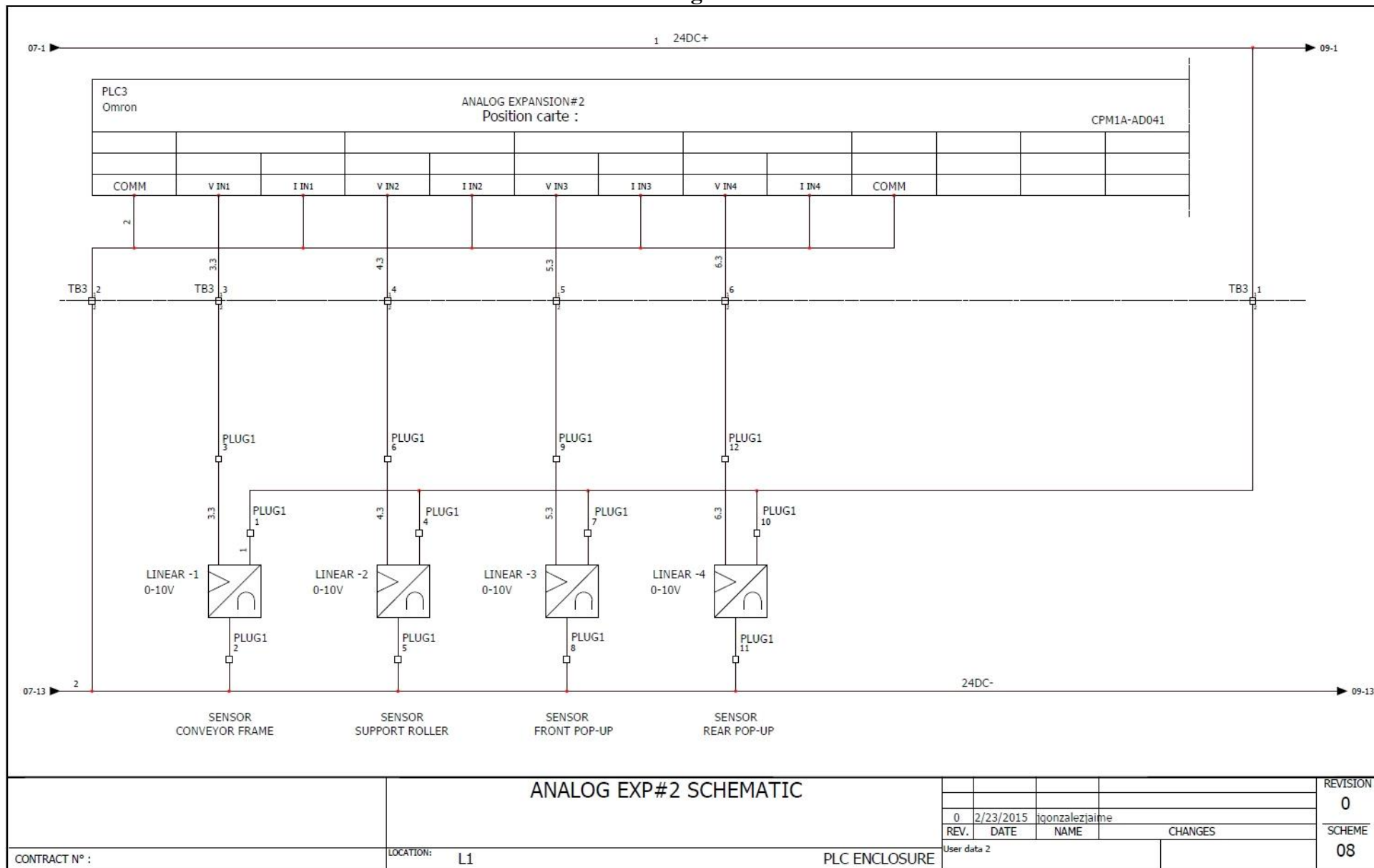
CONTRACT N° :		LOCATION: L1		PLC ENCLOSURE		REVISION	
						0	0
REV.		DATE		NAME		CHANGES	
						06	
User data 2							

Analog #1

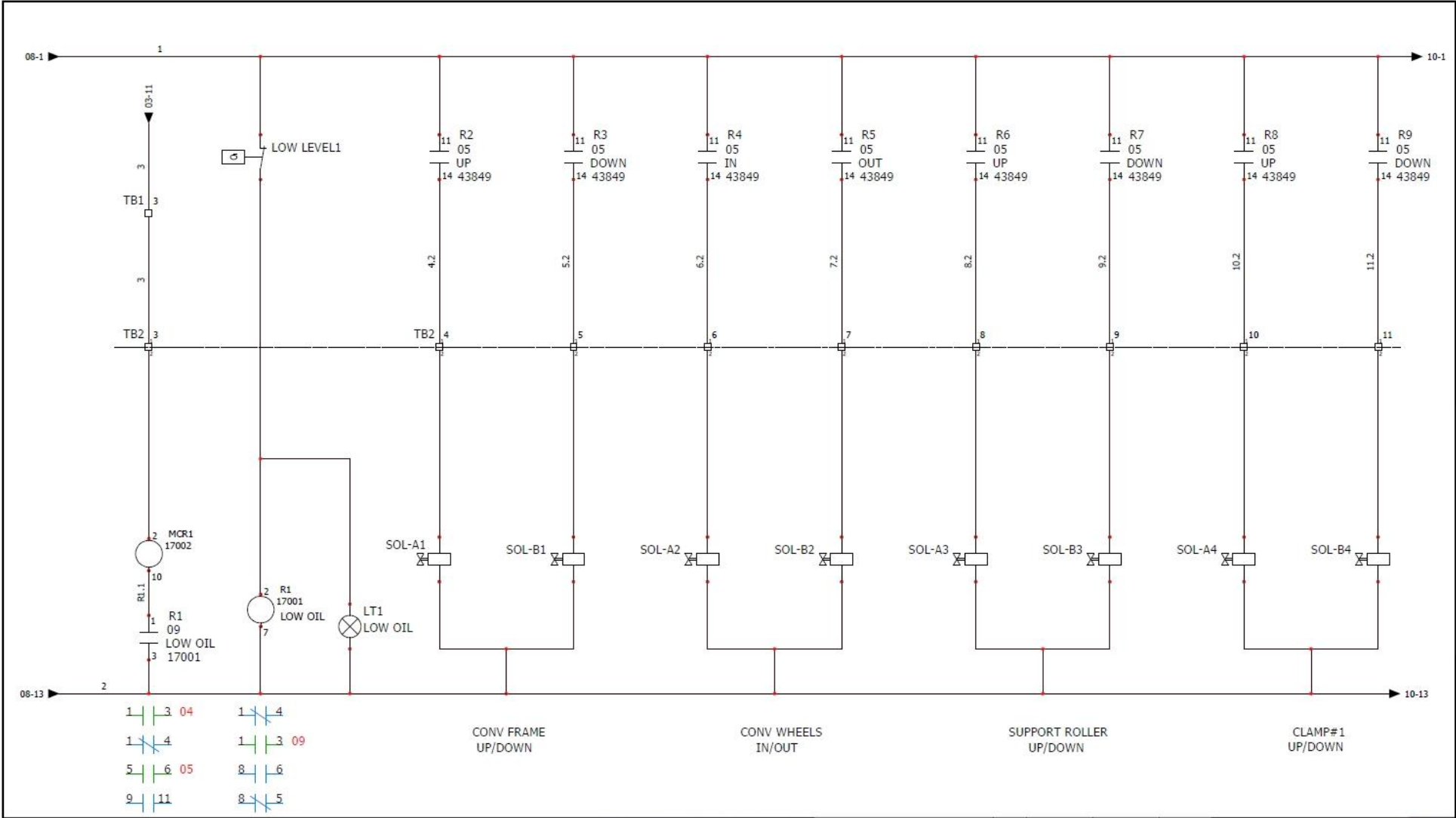


CONTRACT N° :		LOCATION: L1		PLC ENCLOSURE		ANALOG EXP#1 SCHEMATIC		REVISION	
						0		0	
						0 2/23/2015 jgonzalezjame		SCHEME	
						REV. DATE NAME CHANGES		07	
User data 2									

Analog #2

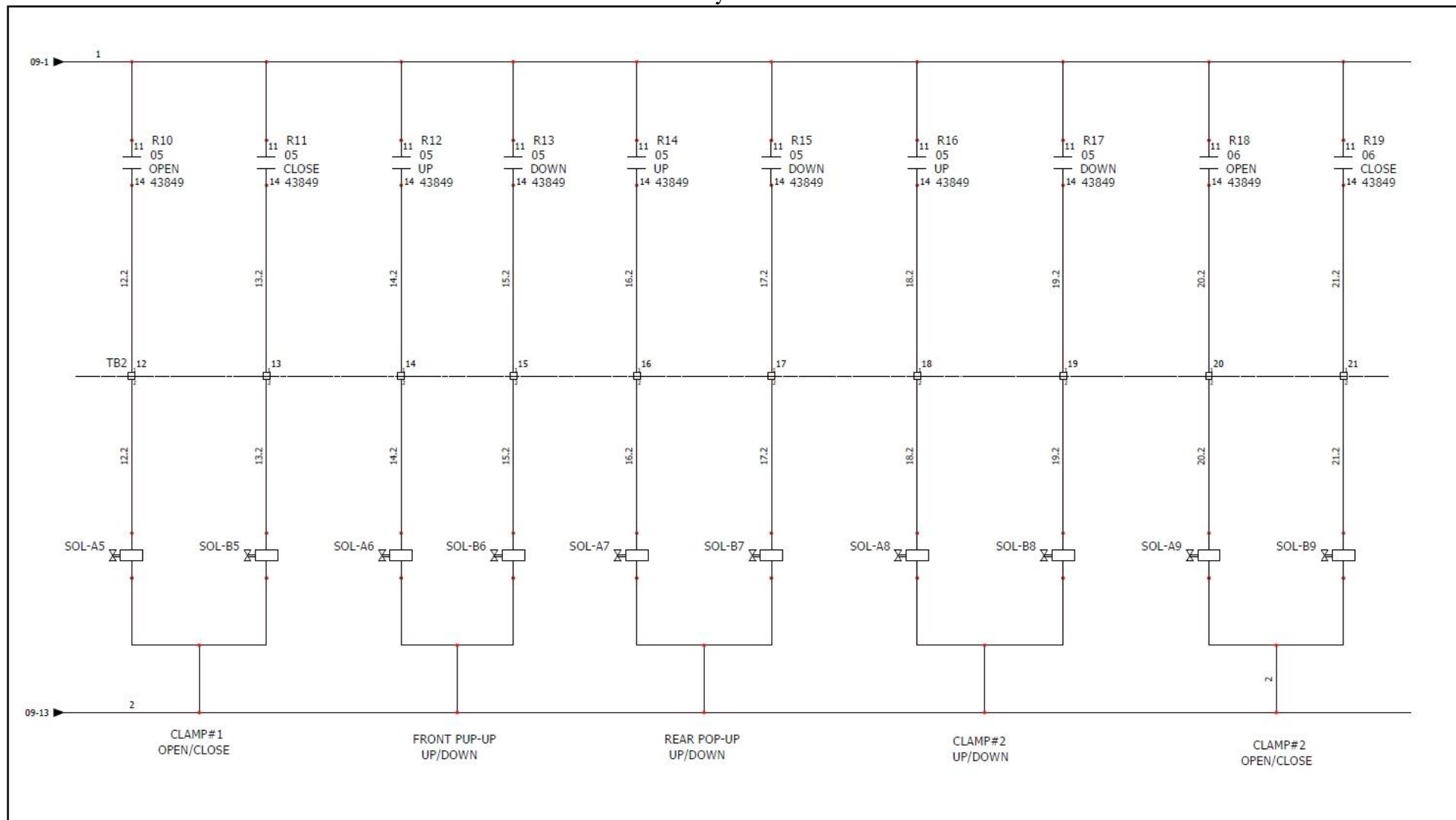


Relay #1



	RELAY SCHEMATIC-1				REVISION	
					0	
	0 2/23/2015 igonzalezlaine				SCHEME	
	REV.		DATE	NAME	CHANGES	
CONTRACT N° :	LOCATION: L1		PLC ENCLOSURE		User data 2	
						09

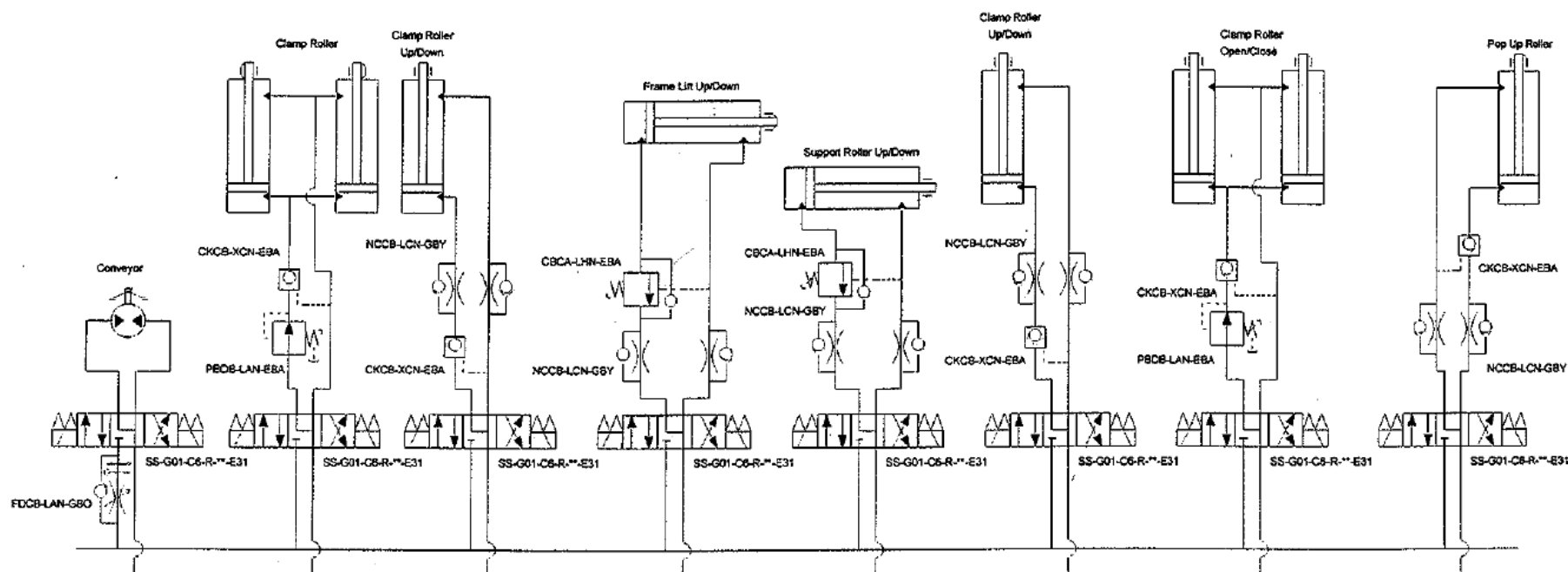
Relay #2



RELAY SCHEMATIC-2

	RELAY SCHEMATIC-2								REVISION
									0
	0	2/23/2015	igonzalezjaim						SCHEME
	REV.	DATE	NAME		CHANGES				
CONTRACT N° :	LOCATION:	L1	PLC ENCLOSURE		User data 2				10

Hydraulic Schematic



Appendix

- Hydraulic Fitting to Tube Torque Specifications
 - ◆ #4 Fitting – 11-12 Lb-Ft
 - ◆ #6 Fitting – 18-20 Lb-Ft
 - ◆ #8 Fitting – 38-42 Lb-Ft
 - ◆ #10 Fitting – 57-62 Lb-Ft
 - ◆ #12 Fitting – 79-87 Lb-Ft

- Hydraulic Hose to Fitting Torque Specifications
 - ◆ #4 Fitting – 11-12 Lb-Ft
 - ◆ #6 Fitting – 20-22 Lb-Ft
 - ◆ #8 Fitting – 43-47 Lb-Ft
 - ◆ #10 Fitting – 50-58 Lb-Ft
 - ◆ #12 Fitting – 79-87 Lb-Ft