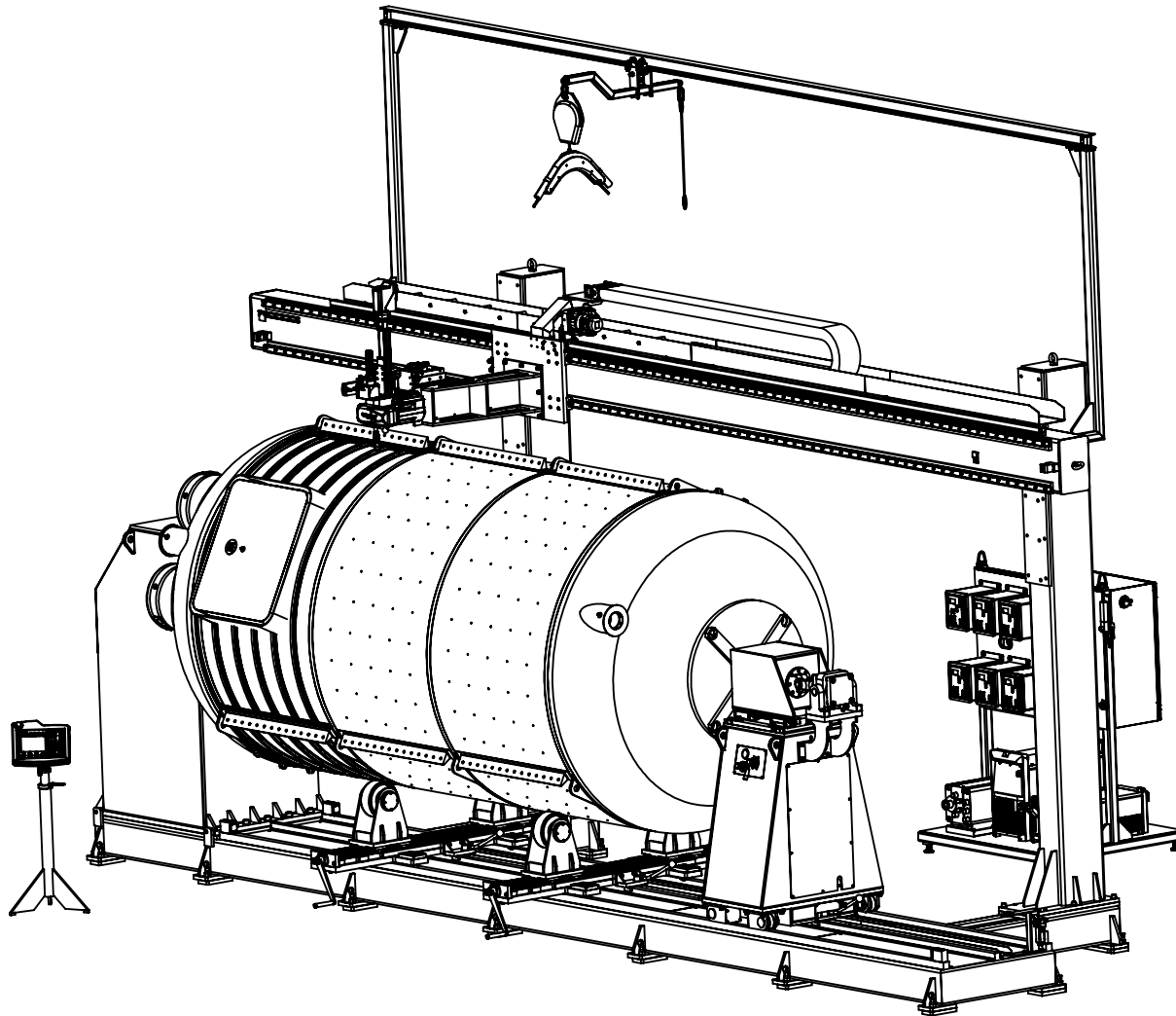


Cobham Mission XM Circuferential Welder

P.O. # 162053 (CMS01)



Built by:

NOTE: This document contains
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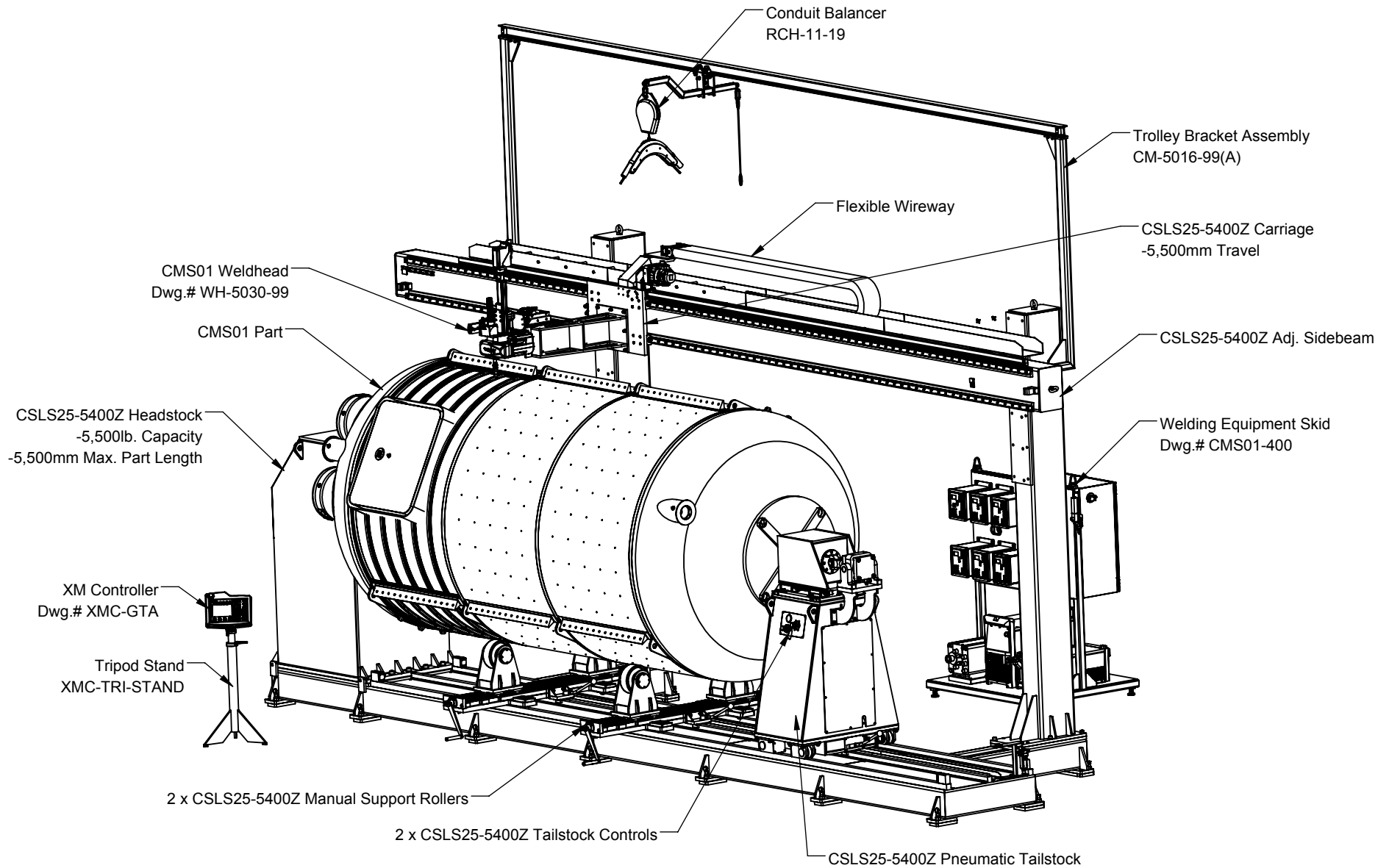
ADVANCED MANUFACTURING ENGINEERING TECHNOLOGIES

355 Dividend Drive
Rexburg, ID 83440
(208) 356-7274
(208) 356-8932 Fax

Shipped: Sept. 2015

www.ametinc.com

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Fraction $\pm 1/16$ X.X ± 0.1
 X.XXX ± 0.010 X ± 0.5
 X.XX ± 0.03 Angle $\pm 5^\circ$
 Finish 100 RMS
 Break Edge, No Burrs Allowed

Contract: 162053

Sheet Size A



355 Dividend Dr.
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Title: Cobham Mission XM Circumferential Sys.

Drawn By: BG

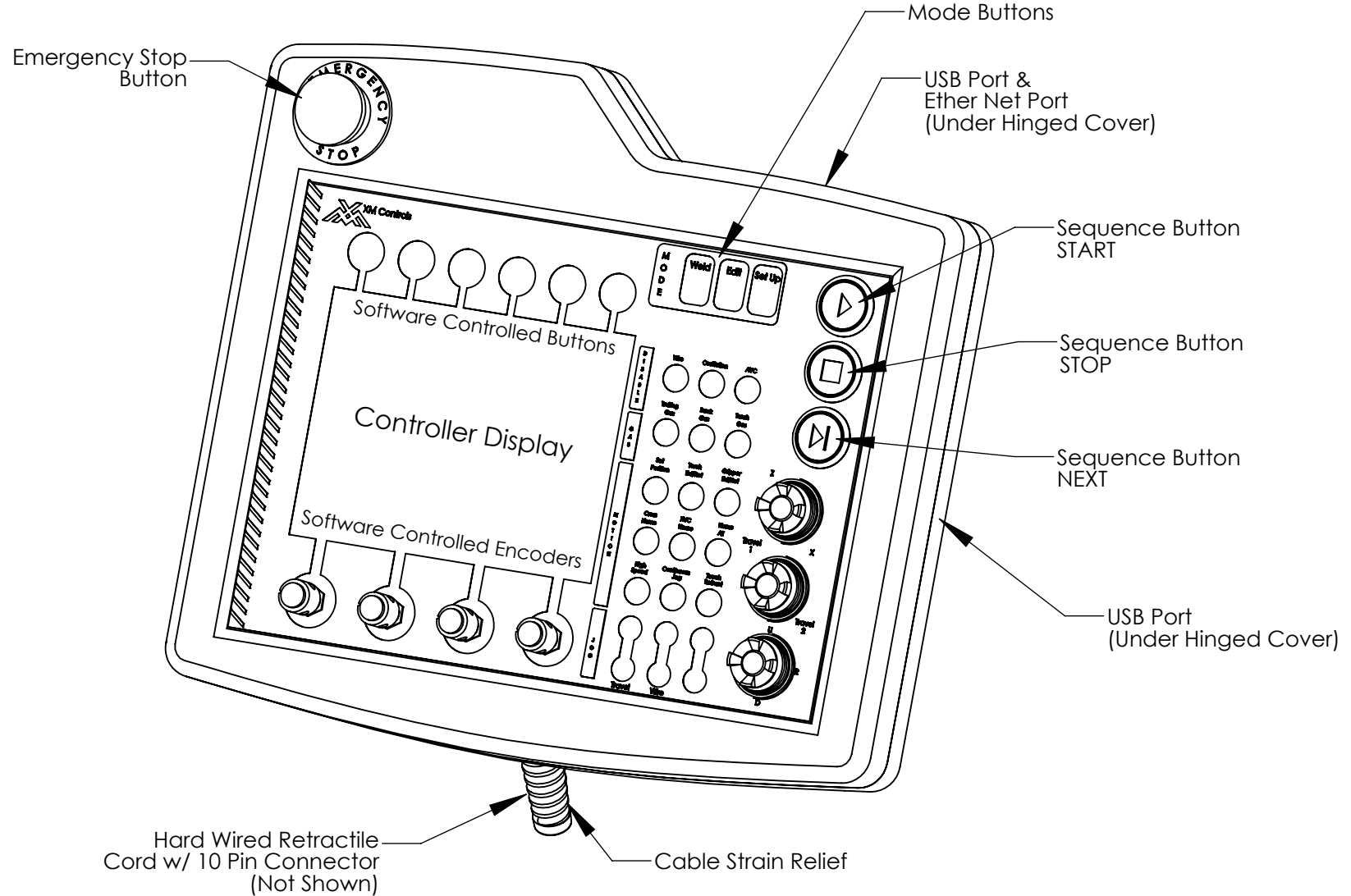
Sheet 1 of 1

Dwg Num:

CMS01-100

Rev.

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NOTES:

- Aprox. Size: 11.2"Hx12.4"Wx3"D
- See Support Documentation Binder For XM System Operation Manual.

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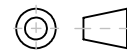
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 X.XX ± 0.03 Angle $\pm 5^\circ$
 Finish 100 RMS
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Title: XM Controller - GTA Style

Drawn By: BG

Sheet 1 of 1

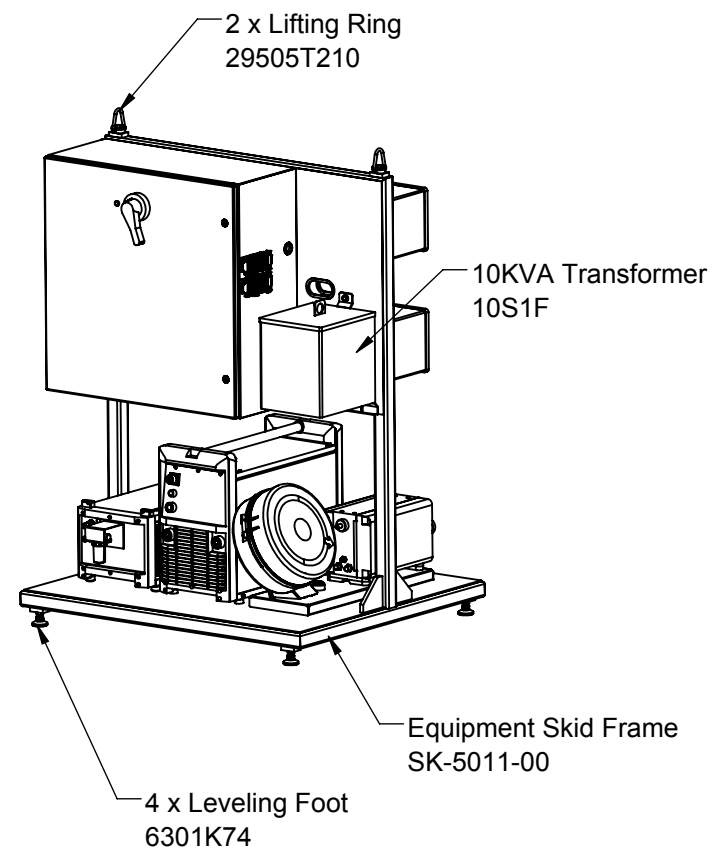
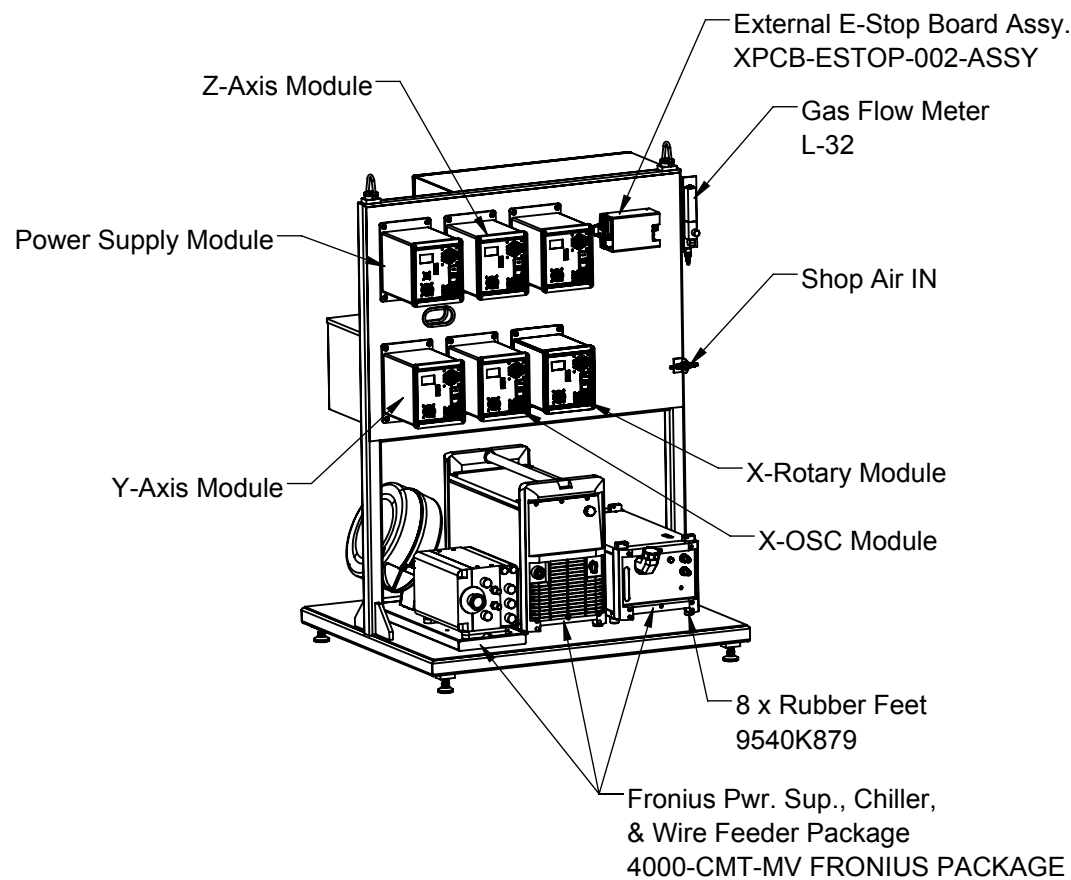
Dwg Num:

XMC-GTA

Rev.

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Rev.	ECN	Date	Approved
-		9/14/2015	



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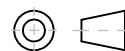
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X.XXX ± 0.010 X ± 0.5
X.XX ± 0.03 Angle $\pm 5^\circ$
Finish 100 RMS
Break Edge, No Burrs Allowed

Contract: CMS01

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Title: Cobham Mission Welding Equipment Skid

Drawn By: BG

Sheet 1 of 1

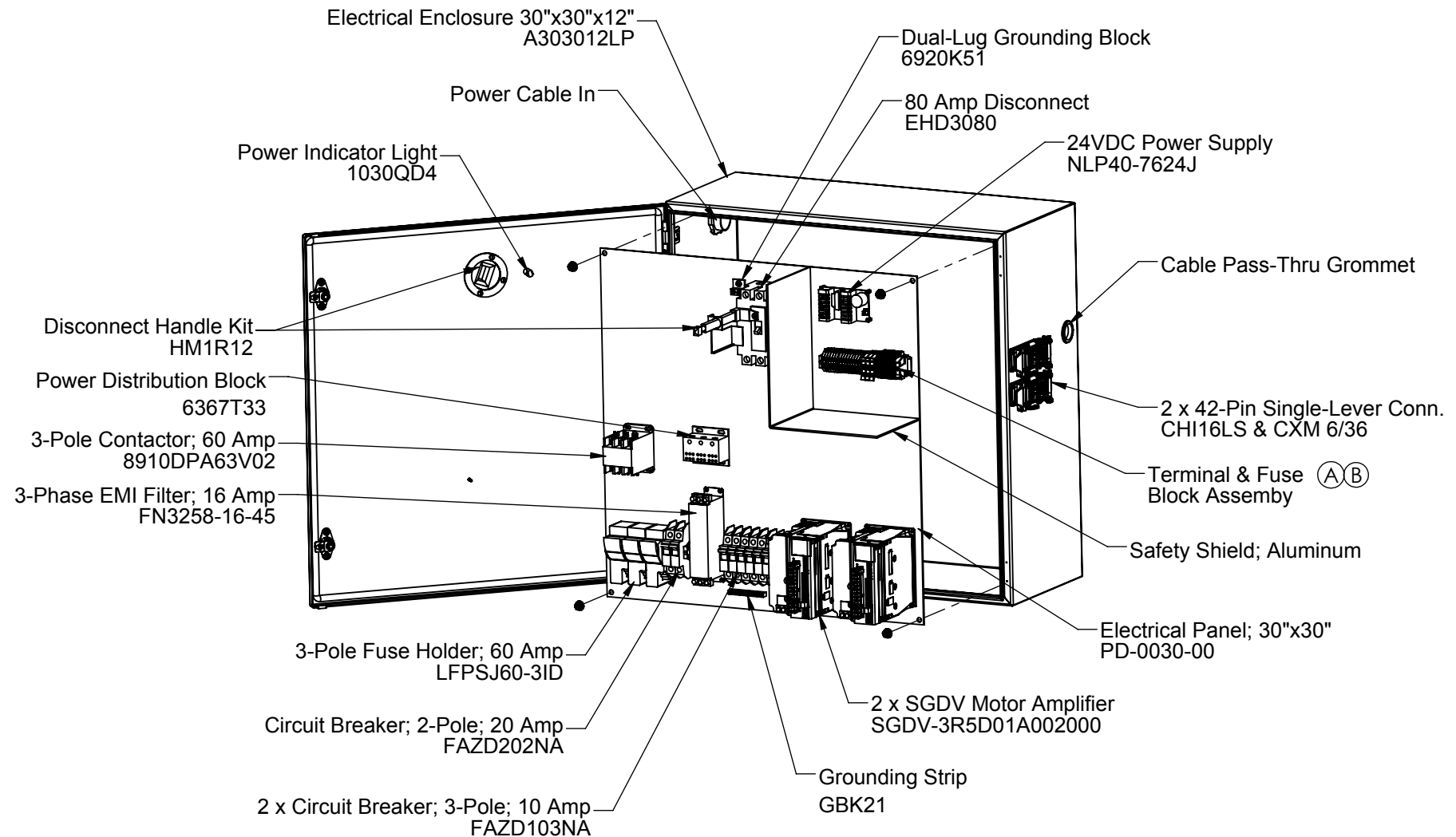
Dwg Num:

CMS01-300

Rev.

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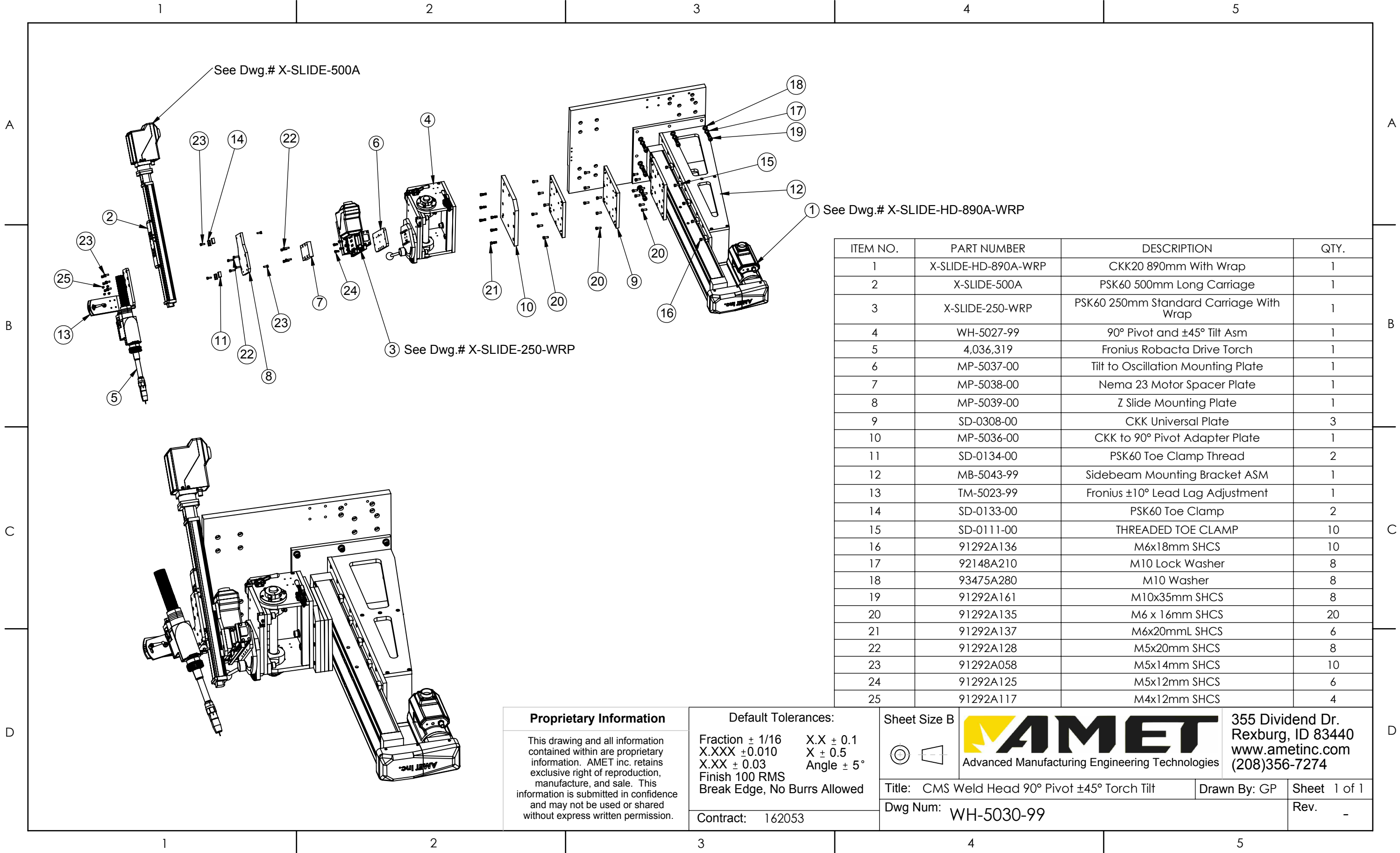
REVISION			
Rev.	ECN	Date	Approved
-		4/2/2015	



- (B) Terminal, & Fuse Block Assembly:
 6 x Black TB AB1VV435UNO
 9 x White TB AB1VV435BLA
 7 x G/Y TB CGT4N
 3 x Fuse Block 11565725
 1 x Fuse Blk End Barrier 11695115
 2 x TB End Stop AB1AB8M35
 2 x TB End Barrier AB1AC24
 1 x DIN Rail 9999NT13

(A) NOTE: See Power Box Fuse Label For Fuse Values

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	Contract: 162053		Title: Single-Point Power Distribution Box				Drawn By: GP	Sheet 1 of 1
			Dwg Num: SPP-D-380-CMS01				Rev. -	



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	X-SLIDE-HD-890A-WRP	CKK20 890mm With Wrap	1
2	X-SLIDE-500A	PSK60 500mm Long Carriage	1
3	X-SLIDE-250-WRP	PSK60 250mm Standard Carriage With Wrap	1
4	WH-5027-99	90° Pivot and ±45° Tilt Asm	1
5	4,036,319	Fronius Robacta Drive Torch	1
6	MP-5037-00	Tilt to Oscillation Mounting Plate	1
7	MP-5038-00	Nema 23 Motor Spacer Plate	1
8	MP-5039-00	Z Slide Mounting Plate	1
9	SD-0308-00	CKK Universal Plate	3
10	MP-5036-00	CKK to 90° Pivot Adapter Plate	1
11	SD-0134-00	PSK60 Toe Clamp Thread	2
12	MB-5043-99	Sidebeam Mounting Bracket ASM	1
13	TM-5023-99	Fronius ±10° Lead Lag Adjustment	1
14	SD-0133-00	PSK60 Toe Clamp	2
15	SD-0111-00	THREADED TOE CLAMP	10
16	91292A136	M6x18mm SHCS	10
17	92148A210	M10 Lock Washer	8
18	93475A280	M10 Washer	8
19	91292A161	M10x35mm SHCS	8
20	91292A135	M6 x 16mm SHCS	20
21	91292A137	M6x20mmL SHCS	6
22	91292A128	M5x20mm SHCS	8
23	91292A058	M5x14mm SHCS	10
24	91292A125	M5x12mm SHCS	6
25	91292A117	M4x12mm SHCS	4

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X.XXX ± 0.010	X ± 0.5
X.XX ± 0.03	Angle ± 5°

Finish 100 RMS
Break Edge, No Burrs Allowed

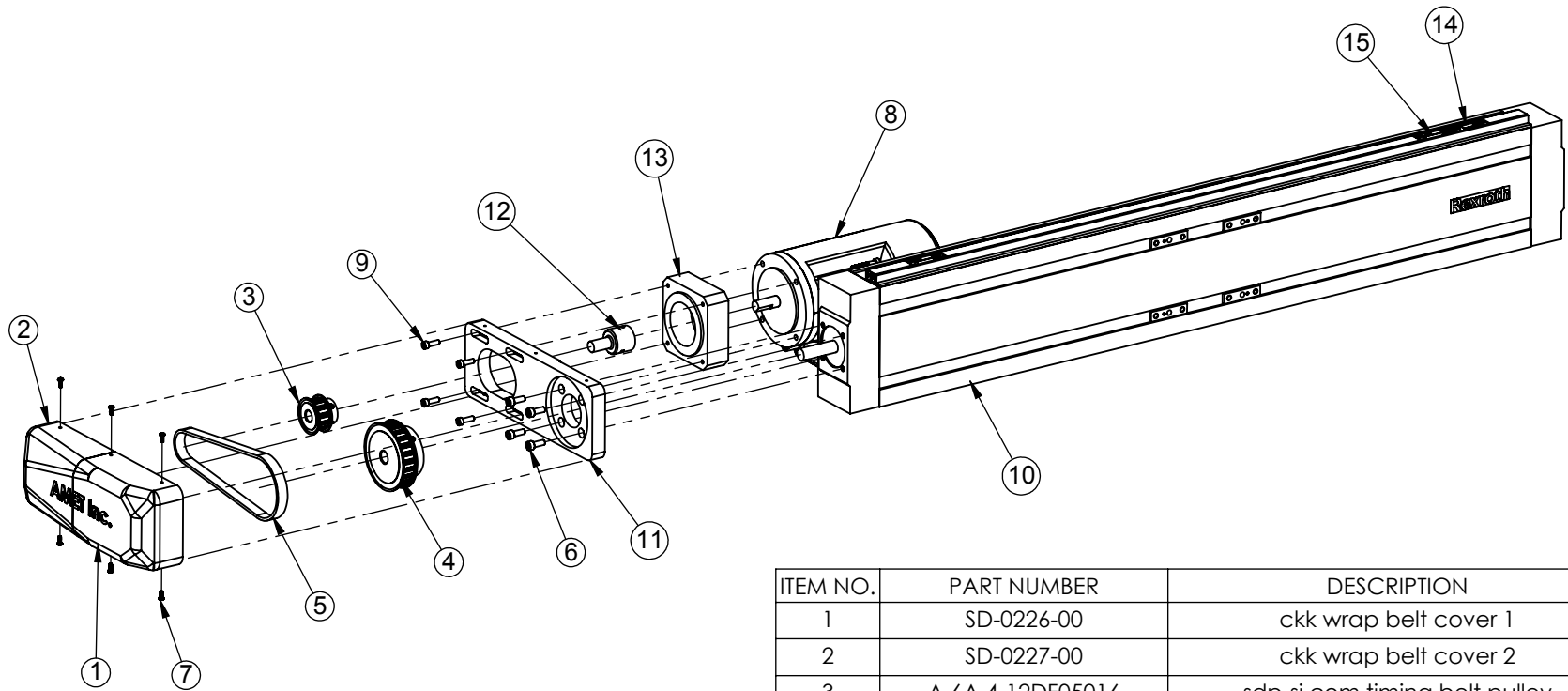
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 **AMET**
Advanced Manufacturing Engineering Technologies

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Title: CMS Weld Head 90° Pivot ±45° Torch Tilt	Drawn By: GP	Sheet 1 of 1
Dwg Num: WH-5030-99		Rev. -

Contract: 162053



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SD-0226-00	ckk wrap belt cover 1	1
2	SD-0227-00	ckk wrap belt cover 2	1
3	A 6A 4-12DF05016	sdp-si.com timing belt pulley	1
4	A 6A 4M24DF12514	sdp-si.com timing belt pulley	1
5	A 6R 4-050050	sdp-si.com timing belt	1
6	91292A135	M6 x 16mm SHCS	4
7	92000A118	M3 x 8mm PHPMS	6
8	MR-0408-99	ELCFT Motor Housing Assem, NEMA 34	1
9	91292A126	M5x16mm SHCS	4
10	0360-500-00 890MM	Bosch CKK20 890mm Linear Slide	1
11	SD-0225-00	wrapped can belt plate	1
12	MR-5016-00	1/2" Shaft Extender	1
13	SD-5003-00	Nema 42C to Nema 34 Transition Spacer	1
14	APM-D3D1	Yamatake Proximity Switch; NO	2
15	APM-D3E1	Yamatake Proximity Switch; NC	1

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X.XX ± 0.03 Angle $\pm 5^\circ$
Finish 100 RMS
Break Edge, No Burrs Allowed

Contract:

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Title: CKK20 890mm With Wrap

Drawn By: GP

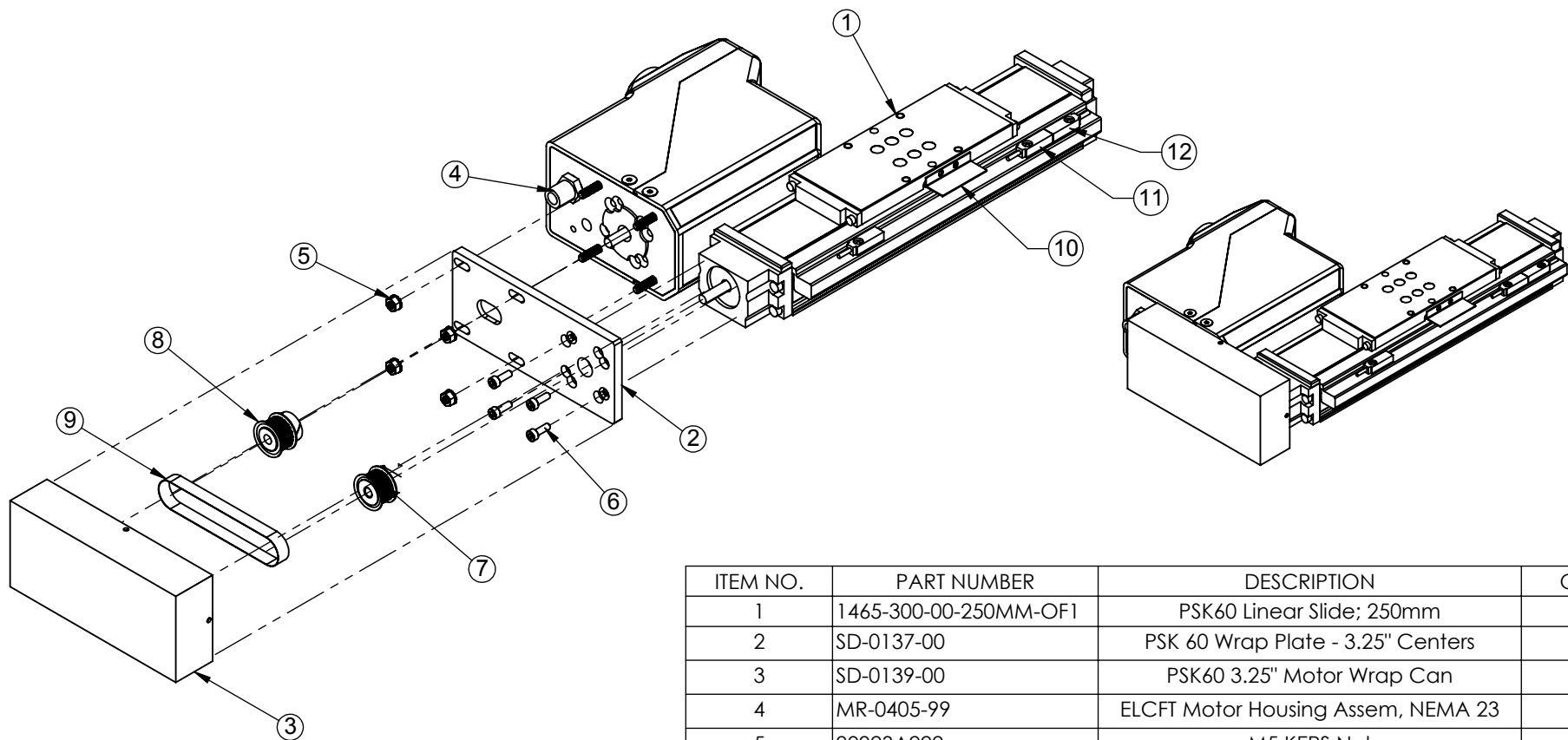
Sheet 1 of 1

Dwg Num:

X-SLIDE-HD-890A-WRP

Rev.

-



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	1465-300-00-250MM-OF1	PSK60 Linear Slide; 250mm	1
2	SD-0137-00	PSK 60 Wrap Plate - 3.25" Centers	1
3	SD-0139-00	PSK60 3.25" Motor Wrap Can	1
4	MR-0405-99	ELCFT Motor Housing Assem, NEMA 23	1
5	90923A222	M5 KEPS Nut	4
6	91292A117	M4x12mm SHCS	4
7	A 6D53M022DF0906	22 Tooth Timing Belt Pulley; 6mm Bore	1
8	A 6Z53-022DF0908	22 Tooth Timing Belt Pulley; 1/4" Bore	1
9	A 6R53M077090	GT2 3mm Pitch 77 tooth 9mm Width	1
10	SD-0142-00	PSK60 Linear Slide - Limit / Home Target	1
11	APM-D3D1	Yamatake Proximity Switch; NO	1
12	APM-D3E1	Yamatake Proximity Switch; NC	2

Proprietary Information

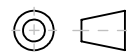
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X.XXX ± 0.010 X ± 0.5
X.XX ± 0.03 Angle $\pm 5^\circ$
Finish 100 RMS
Break Edge, No Burrs Allowed

Contract:

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Title: PSK60 250mm Standard Carriage w/ Wrap

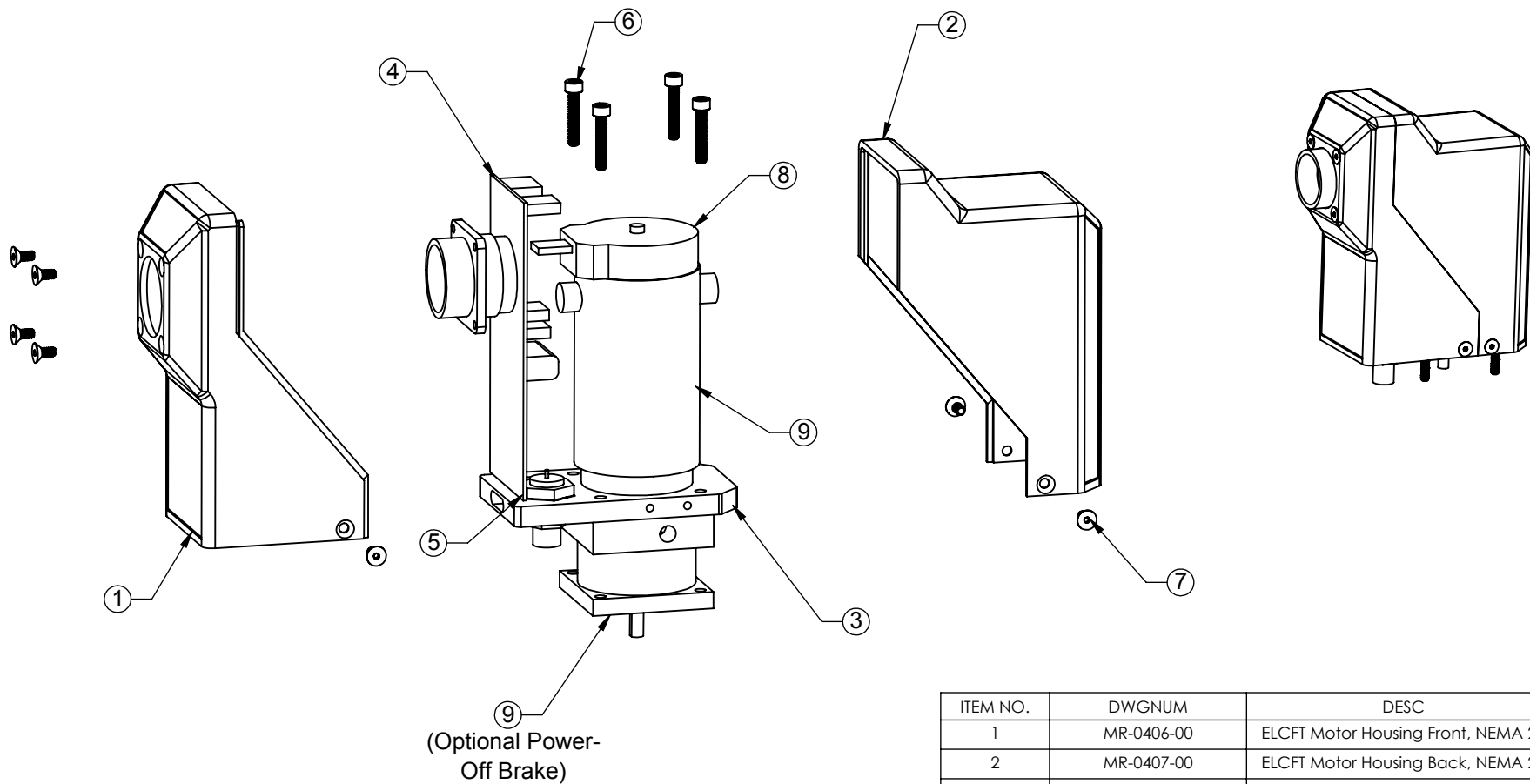
Drawn By:

Sheet 1 of 1

Dwg Num:

X-SLIDE-250-WRP

Rev.



ITEM NO.	DWGNUM	DESC	QTY.
1	MR-0406-00	ELCFT Motor Housing Front, NEMA 23	1
2	MR-0407-00	ELCFT Motor Housing Back, NEMA 23	1
3	MR-0405-00	ELCFT Motor Housing Plate, NEMA 23	1
4	PCB-AVC-006	PCB, AVC Interface w/o Line Driver	1
5	861611-1	Connector, High Voltage, Bulkhead Receptacle w/ Nut	1
6	92196A247	10-24 SHCS, 1" Length	4
7	92210A192	#8-32 FHCS, 3/8" Length	8
8	E3-2048-250-IE-H-D-B	Encoder, US Digital, 1/4" Bore, NEMA 23	1
9	0240-06-018	Electrocraft Motor, NEMA 23	1

Proprietary Information

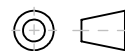
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X.XXX ± 0.010 X ± 0.5
X.XX ± 0.03 Angle $\pm 5^\circ$
Finish 100 RMS
Break Edge, No Burrs Allowed

Contract:

Sheet Size A



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Title: ELCFT Motor Housing Assem, NEMA 23

Drawn By: IH

Sheet 1 of 1

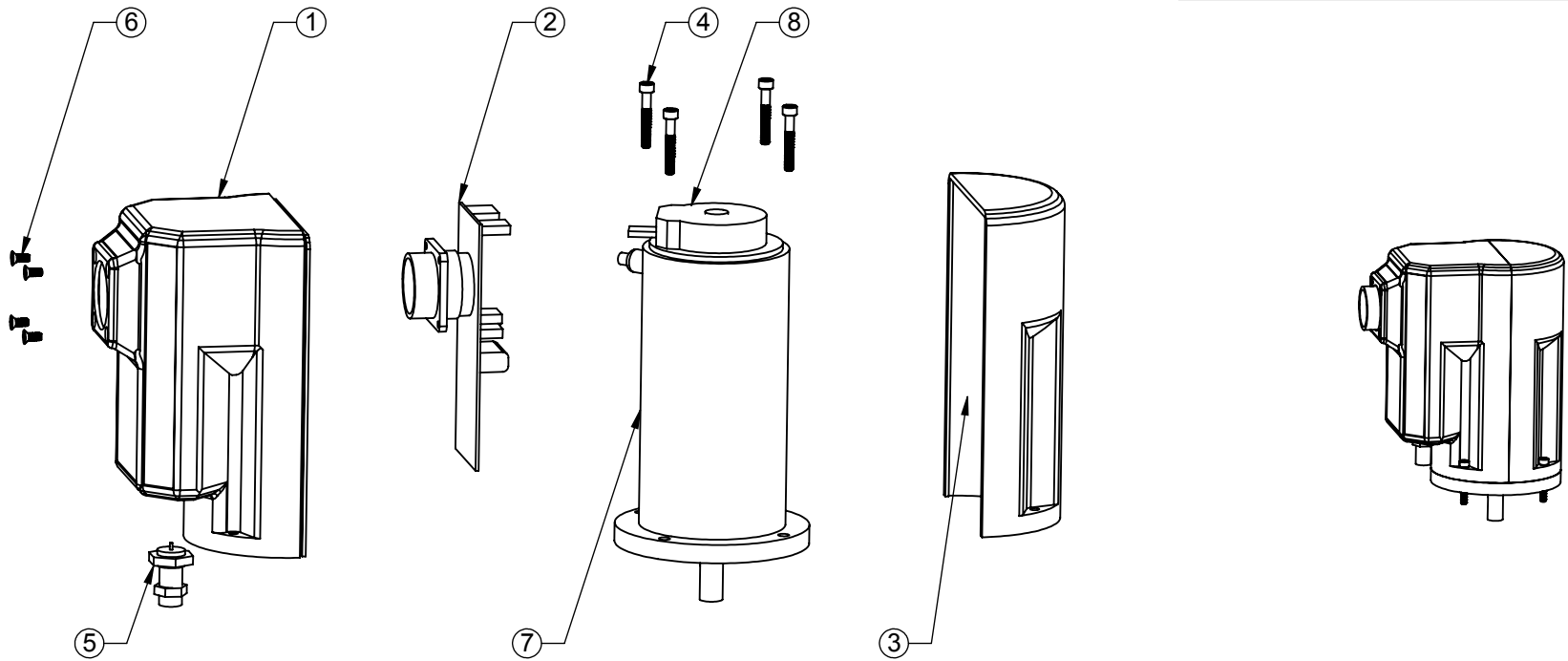
Dwg Num:

MR-0405-99

Rev.

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REVISION			
Rev.	ECN	Date	Approved
-		7/22/2014	



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MR-0408-00	ELCFT Motor Housing Front, NEMA 34	1
2	PCB-AVC-001	Motor Interface Board	1
3	MR-0409-00	ELCFT Motor Housing Back, NEMA 34	1
4	92196A276	#10-32 SHSC, 1.25" Length	4
5	861611-1	Connector, High Voltage, Bulkhead Receptacle w/ Nut	1
6	91500A192	#8-32 FHS, Phillips, 3/8" Length	4
7	0644-06-011	Electrocraft Motor, NEMA 34, 42C Flange	1
8	E3-2048-500-IE-H-D-B	Encoder, US Digital, 1/2" Bore, NEMA 42C	1

Proprietary Information

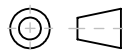
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X.XXX ± 0.010 X ± 0.5
X.XX ± 0.03 Angle $\pm 5^\circ$
Finish 100 RMS
Break Edge, No Burrs Allowed

Contract: SAIC01

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Title: ELCFT Motor Housing Assem, NEMA 34

Drawn By: IH

Sheet 1 of 1

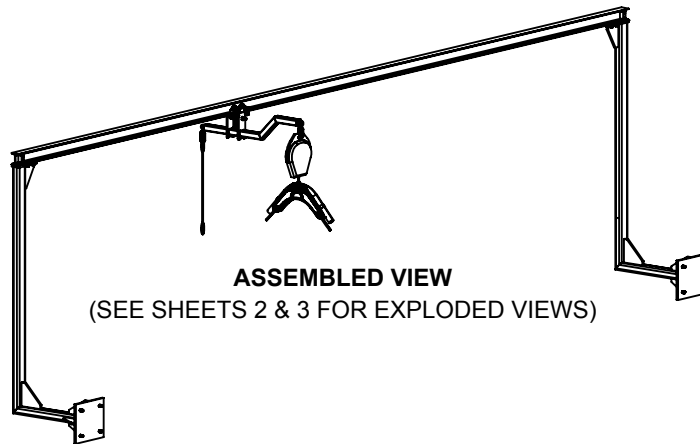
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MR-0408-99

Rev.

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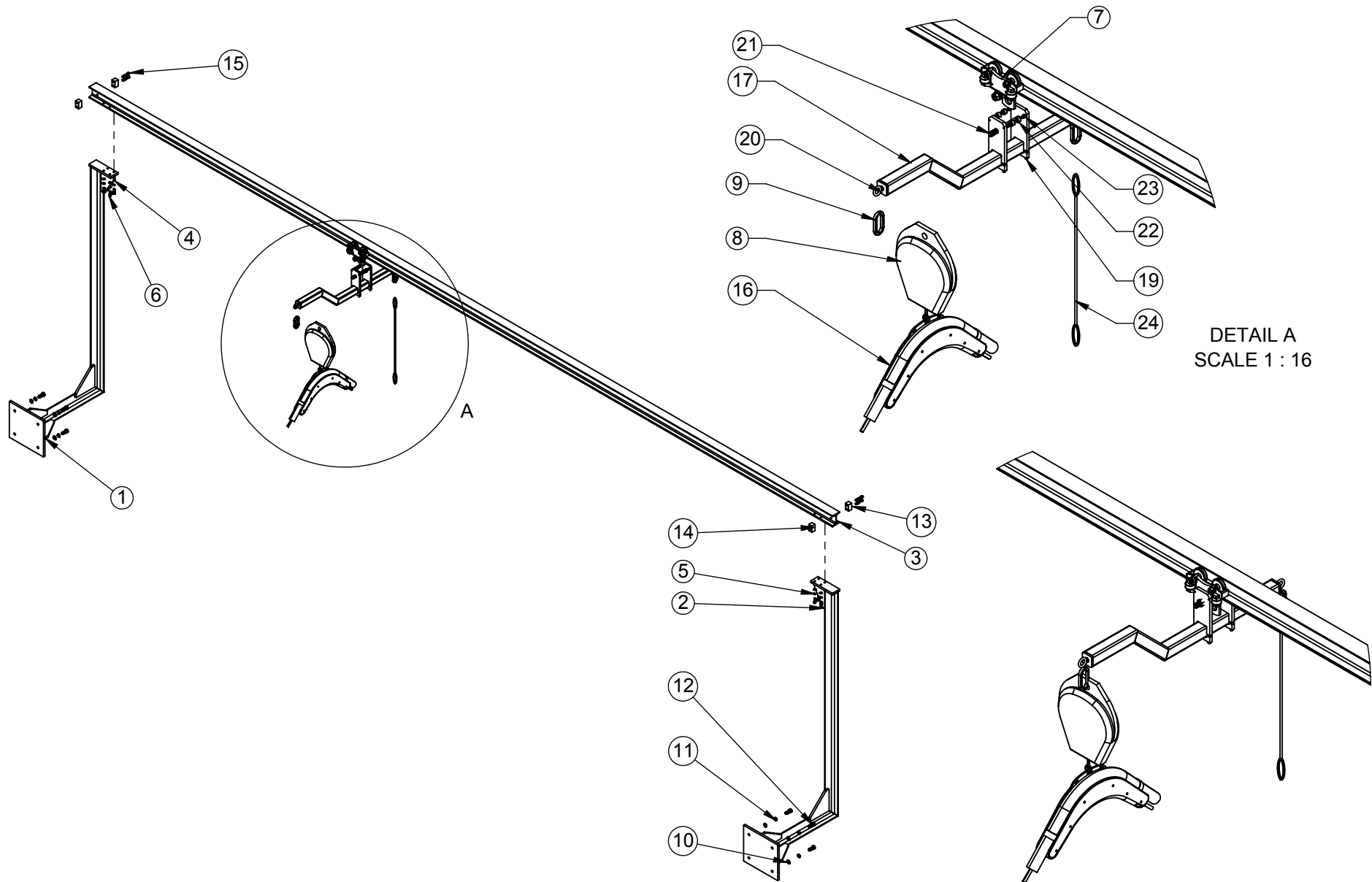
REVISION			
Rev.	ECN	Date	Approved
-		2/2/2015	
A		4/13/2015	



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	CM-5013-00	Trolley Bracket Support HS Side	1
2	CM-5014-00	Trolley Bracket Support TS Side	1
3	CM-5015-00	Trolley Beam	1
4	93475A270	M8 Washer	8
5	92148A200	M8 Lock Washer	8
6	91292A148	M8x25mm SHCS	8
7	1/4 Ton Trolley	pacline.com I-Beam Trolley	1
8	RCH-11-19	Wire-Wizard 11-19lb Conduit Balancer	1
9	8947T18	Oval Threaded Connector	2
10	93475A290	M12 Washer	8
11	92148A214	M12 Lock Washer	8
12	91287A191	M12x35mm Hex Head Screw	8
13	CM-5017-00	Cable Trolley Hard Stop	2
14	CM-5018-00	Cable Trolley Hard Stop Thread	2
15	91292A208	M8x45mm SHCS	4
16		CMT Wire Buffer	1
17	CM-5022-00	Wire Buffer Mount Arm	1
18	CM-5021-00	TROLLEY CLAMP PLATE	2
19	91292A193	M5x35mm SHCS	4
20	4843T11	M6 Eyebolt	2
21	92198A732	1/2" - 13 x 5.0" Hex Head	1
22	3659K45	9/16" Dia. Crowned Sealed Track Roller	4
23	92320A809	#10 Spacer 3/8" OD 7/32" Length	4
24	3550T11	2 ft. Wire Rope Sling	1

SEE SHEETS 2 & 3 FOR ITEM LOCATIONS

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	Fraction $\pm 1/16$ X.XXX ± 0.010 X.XX ± 0.03 Finish 100 RMS	X.X ± 0.1 X ± 0.5 Angle $\pm 5^\circ$	 	Title: Trolley Bracket Assembly		Drawn By: GP	Sheet 1 of 3	
	Break Edge, No Burrs Allowed		Dwg Num:		CM-5016-99		Rev.	A
	Contract: CMS01							



DETAIL A
SCALE 1 : 16

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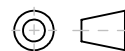
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X.XXX ± 0.010 X ± 0.5
X.XX ± 0.03 Angle $\pm 5^\circ$
Finish 100 RMS
Break Edge, No Burrs Allowed

Contract: CMS01

Sheet Size A



355 Dividend Dr.
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Title: Trolley Bracket Assembly

Drawn By: GP

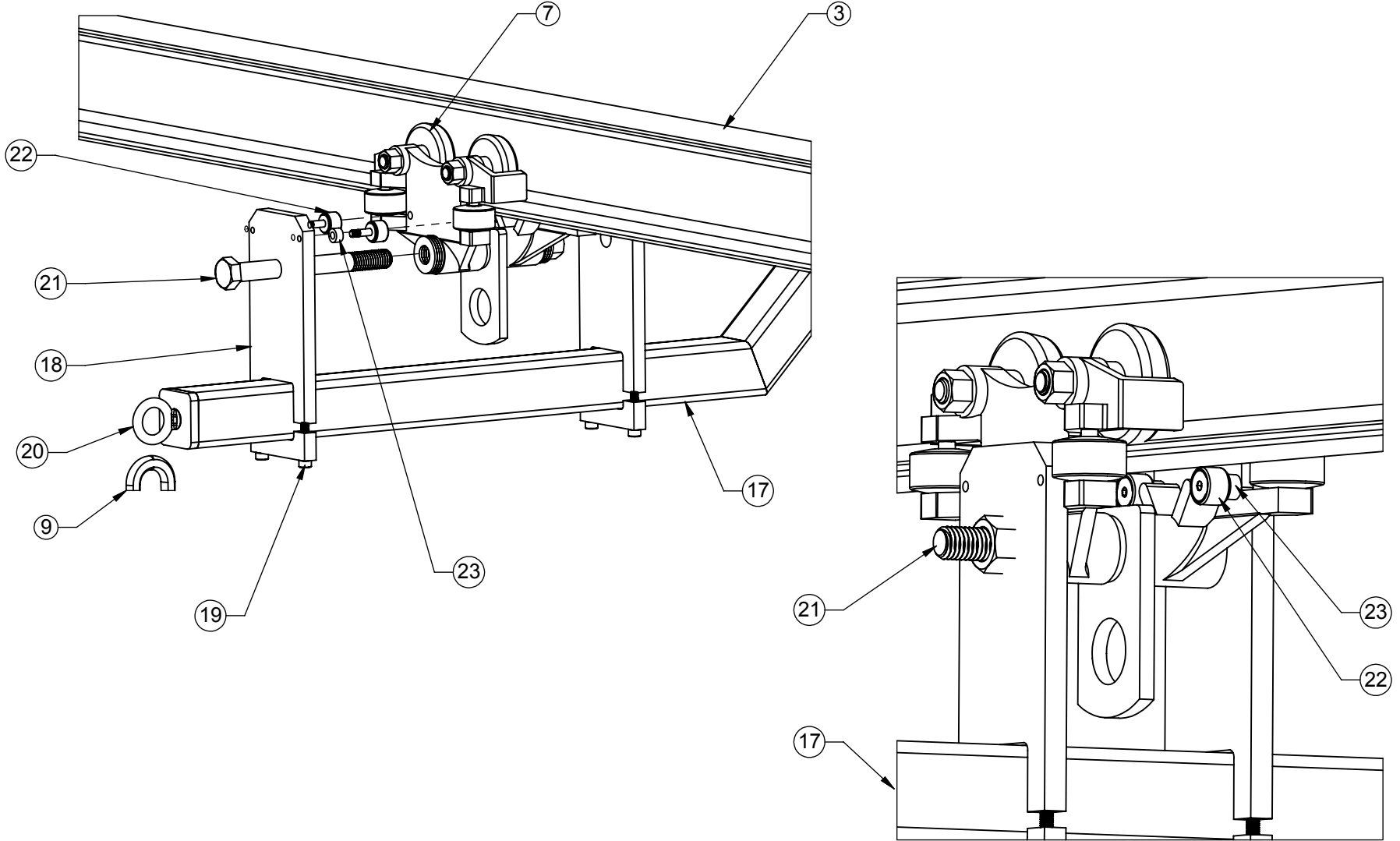
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Dwg Num:

CM-5016-99

Rev.

A



Proprietary Information

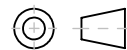
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Fraction $\pm 1/16$ X.X ± 0.1
X.XXX ± 0.010 X ± 0.5
X.XX ± 0.03 Angle $\pm 5^\circ$
Finish 100 RMS
Break Edge, No Burrs Allowed

Contract: CMS01

Sheet Size A



355 Dividend Dr.
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Title: Trolley Bracket Assembly

Drawn By: GP

Sheet 3 of 3

Dwg Num:

CM-5016-99

Rev.

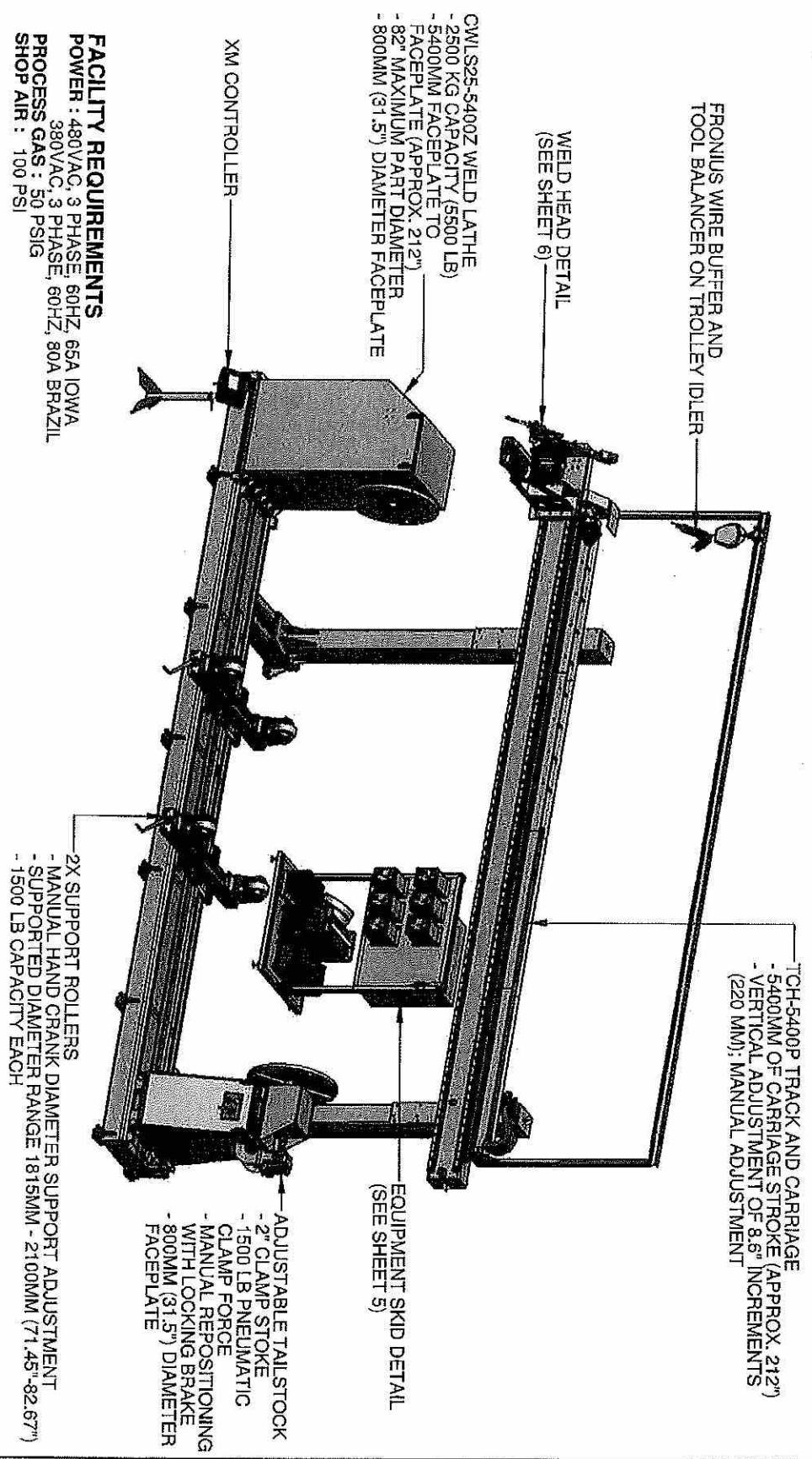
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CMSX

COBHAM MISSION SYSTEMS

XM CONTROLLED GMAW WELD LATHE

REVISION			
Rev.	ECN	Date	Approved
-		12/17/2014	
A		1/5/2015	

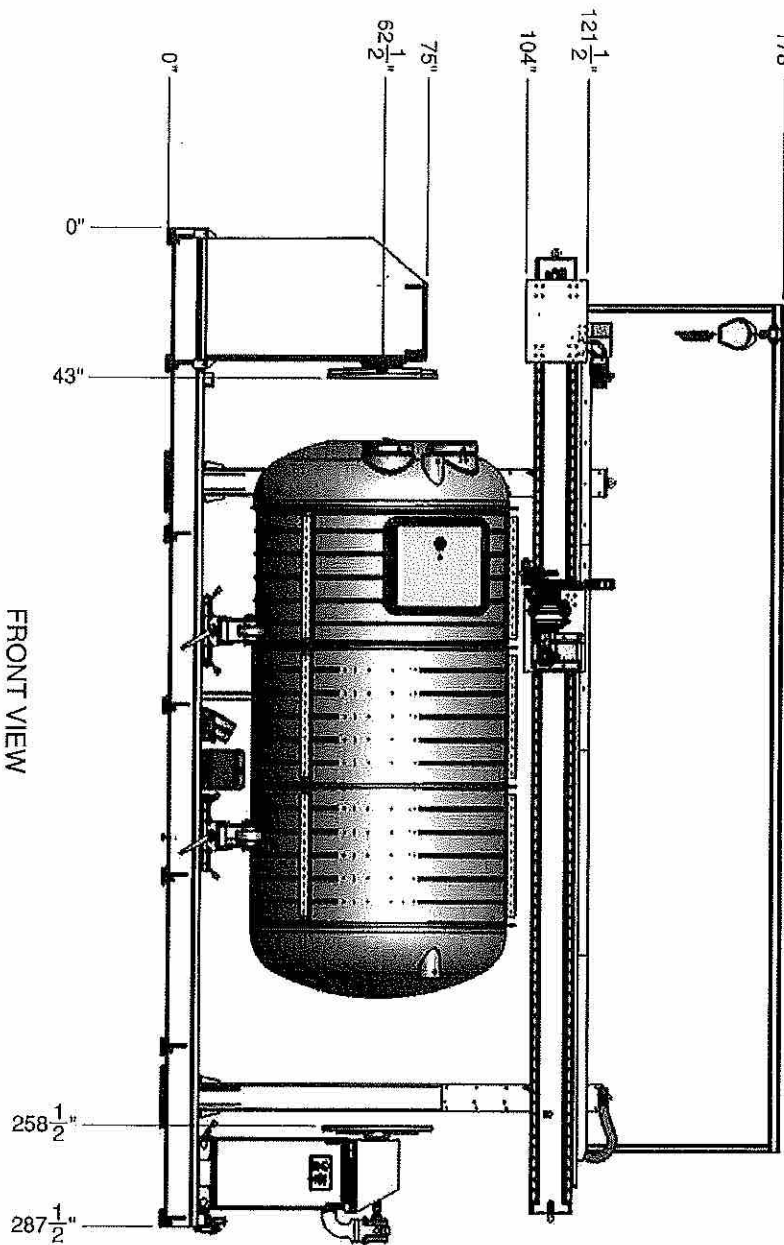


FACILITY REQUIREMENTS
POWER : 480VAC, 3 PHASE, 60HZ, 65A IOWA
380VAC, 3 PHASE, 60HZ, 80A BRAZIL
PROCESS GAS : 50 PSIG
SHOP AIR : 100 PSI

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	Authorized By: <i>J. J. Jones</i>		
	Company: <i>Cobham</i>		
	Signature: <i>[Signature]</i>		
Date: <i>1/15/15</i>	Title: COBHAM FACILITY LAYOUT	Drawn By: GP	Sheet 1 of 5
	Dwg Num: CMS-FCLT		Rev. A

APPROXIMATE SYSTEM DIMENSIONS

(A) CHANGED HEIGHT FOR CUSTOMERS FACILITY
178"



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Approval

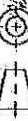
Authorized By:

Company:

Signature:

Date:

Sheet Size A



Advanced Manufacturing Engineering Technologies

AMET

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Title: COBHAM FACILITY LAYOUT

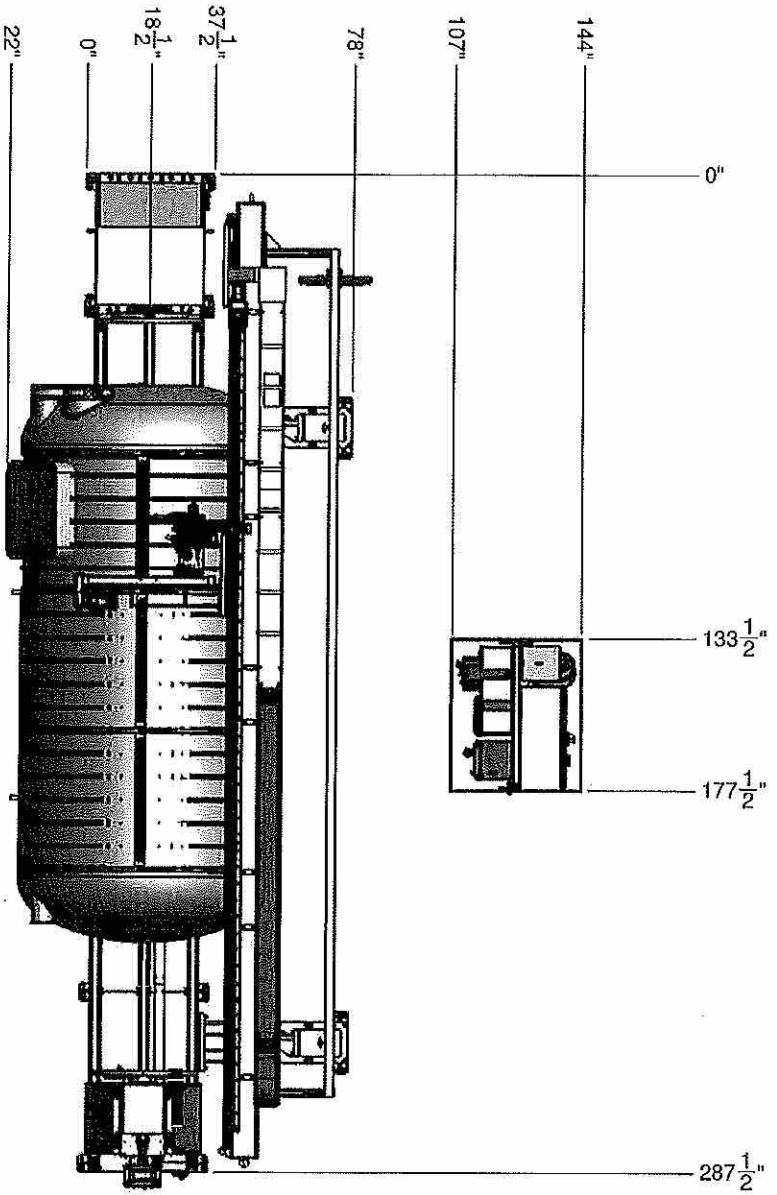
Drawn By: GP

Sheet 2 of 5

Dwg Num: CMS-FCLT

Rev. A

APPROXIMATE SYSTEM DIMENSIONS



TOP VIEW

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EQUIPMENT SKID DETAIL

XM MODULES

- X-PS - POWER SUPPLY CONTROL MODULE
- X-LINEAR - LINEAR MOTION CONTROL MODULE (X-AXIS) CARRIAGE
- X-LINEAR - LINEAR MOTION CONTROL MODULE (Y-AXIS)
- X-LINEAR - LINEAR MOTION CONTROL MODULE (Z-AXIS)
- X-ROTARY - ROTARY MOTION CONTROL MODULE (HEADSTOCK)
- X-OSC - OSCILLATION CONTROL MODULE

XM CONTROL MODULES

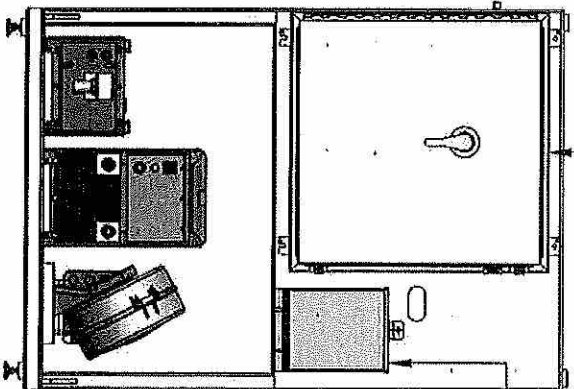
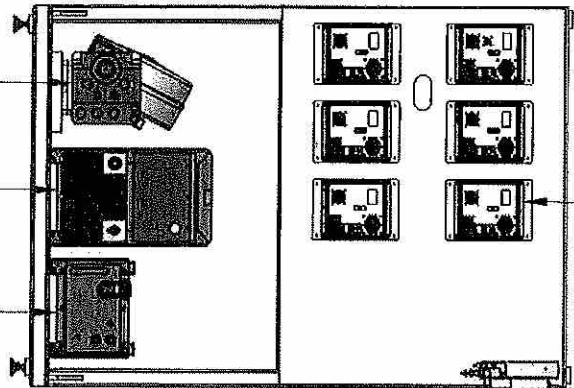
SINGLE POINT POWER
DISTRIBUTION ENCLOSURE
- DISCONNECT HANDLE

TRANSFORMER
- 480V & 380V
COMPATIBLE

FLOWMETER
- TORCH GAS

FRONIUS VR 1550
WIRE FEED

FRONIUS FK4000 WATER CIRCULATOR
CMT POWER SUPPLY



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Approval

Authorized By: *John W. S. W.*

Company: *COBHAM*

Signature: *John W. S. W.*

Date: *11/15/15*



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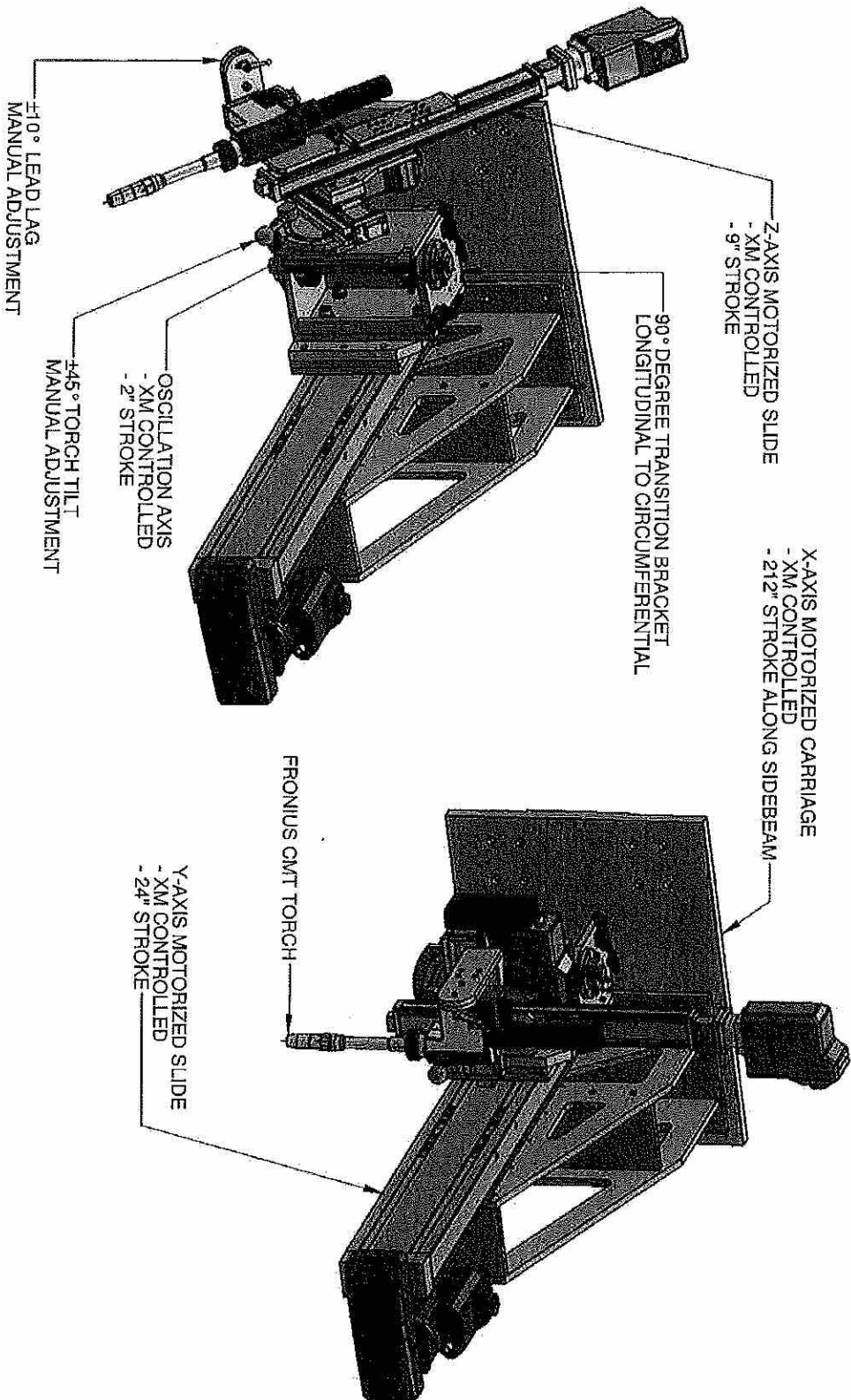
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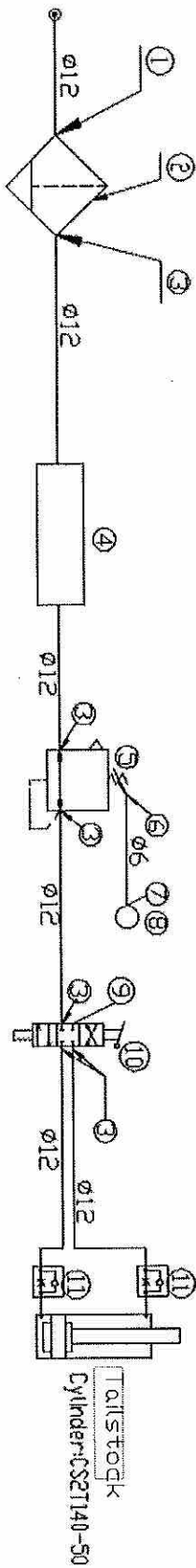
Sheet 4 of 5

Rev. A

WELD HEAD DETAIL



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		Company:	<i>Cobham</i>
		Signature:	<i>[Signature]</i>
		Date:	<i>11/5/15</i>
Sheet Size A		Title: COBHAM FACILITY LAYOUT	
		Drawn By: GF	Sheet 5 of 5
355 Dividend Dr. Rexburg, ID 83440 www.ametinc.com		Rev.	A



13	Hose/TU0604Y-20	SMC	0.2
12	Hose/TUI208BU-100	SMC	5
11	Speed control valve/AS420IF-04-1/2	SMC	2
10	Manual valve/VH300-03	SMC	1
9	silencer/3/8/AN300-03	SMC	1
8	Meter/G46-10-01M-C	SMC	1
7	Fitting/KQDF06-01	SMC	1
6	Elbow/KQ2L06-01S	SMC	1
5	Regulator/AR30-03H	SMC	1
4	Tracheal scroll/YL-E719		1
3	Elbow/KQPL12-03S	SMC	6
2	Filter/AF30-03BC	SMC	1
1	Fitting/KQ2H12-03S	SMC	1
Items	Description	Supplier	Qty



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Project: P14024

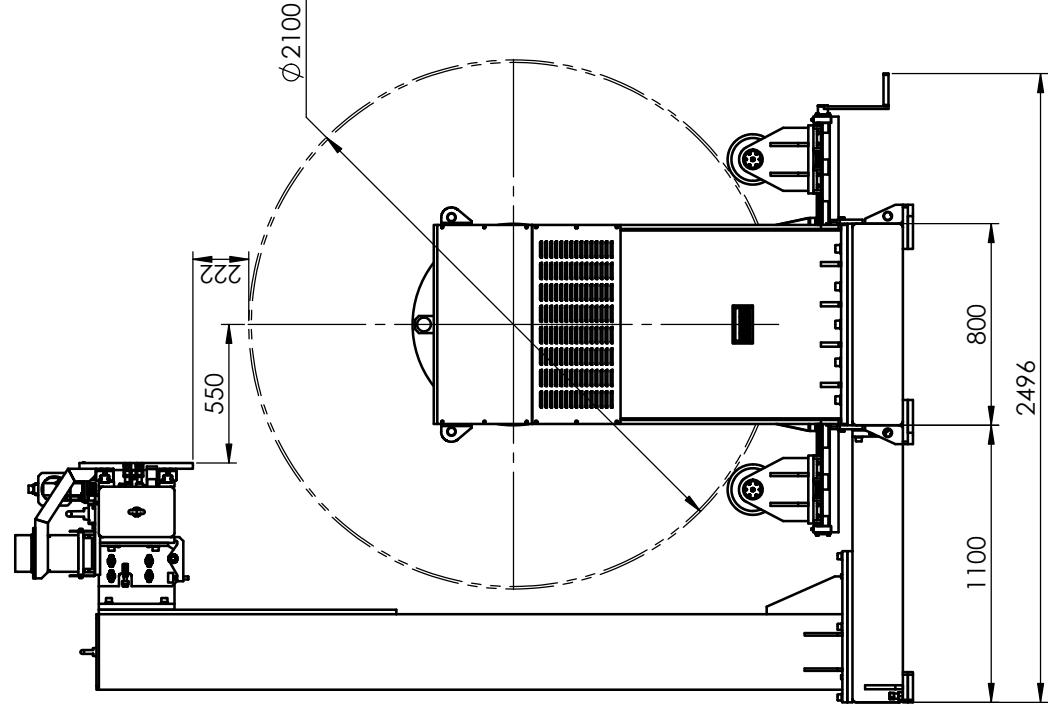
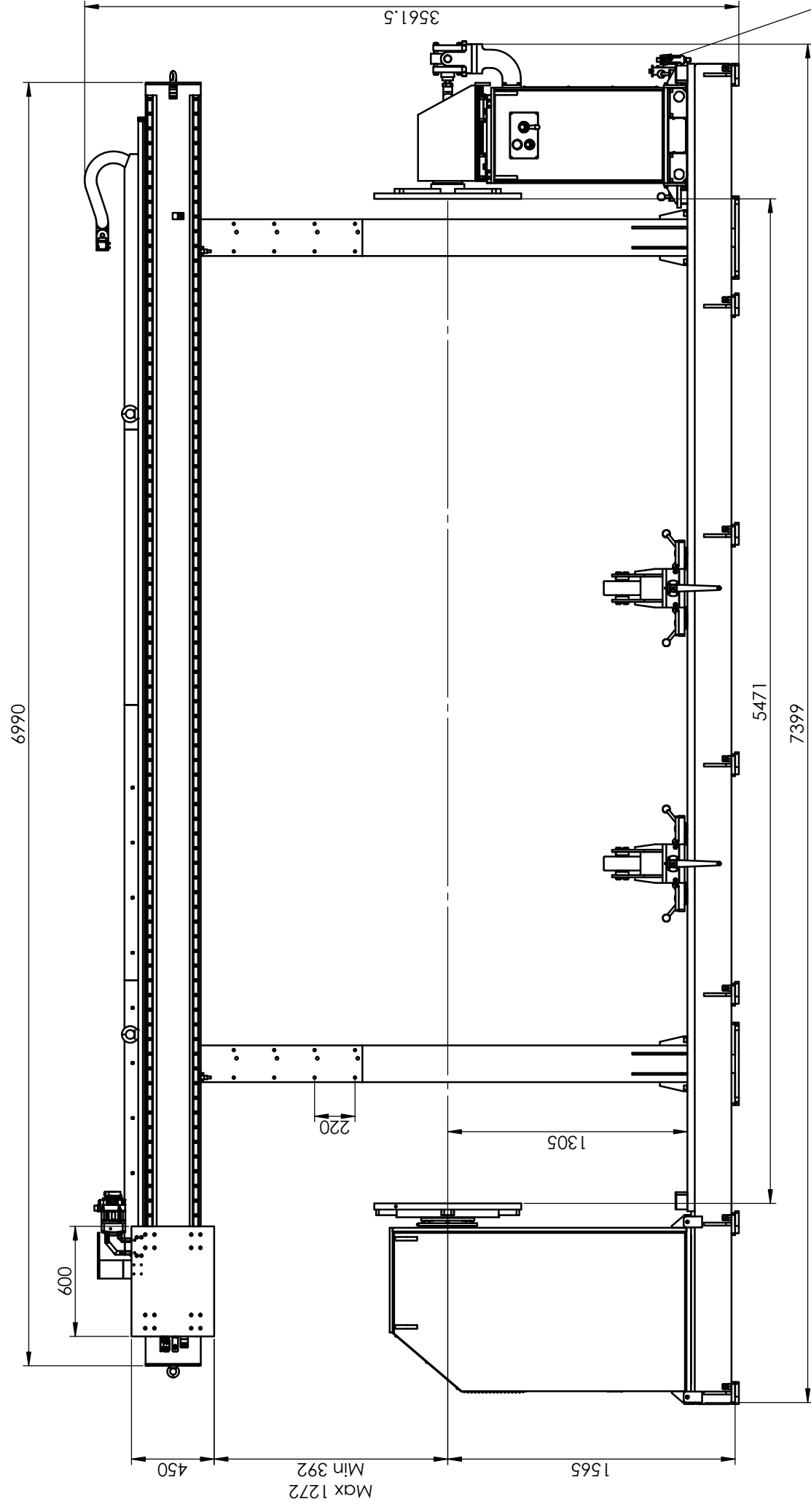
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Checked by:
Date: 2014-12-12

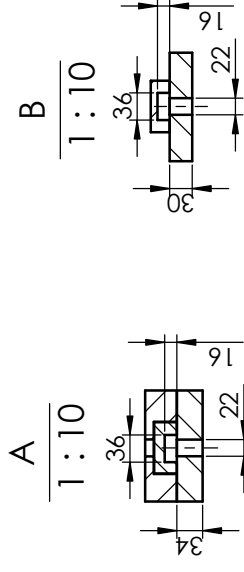
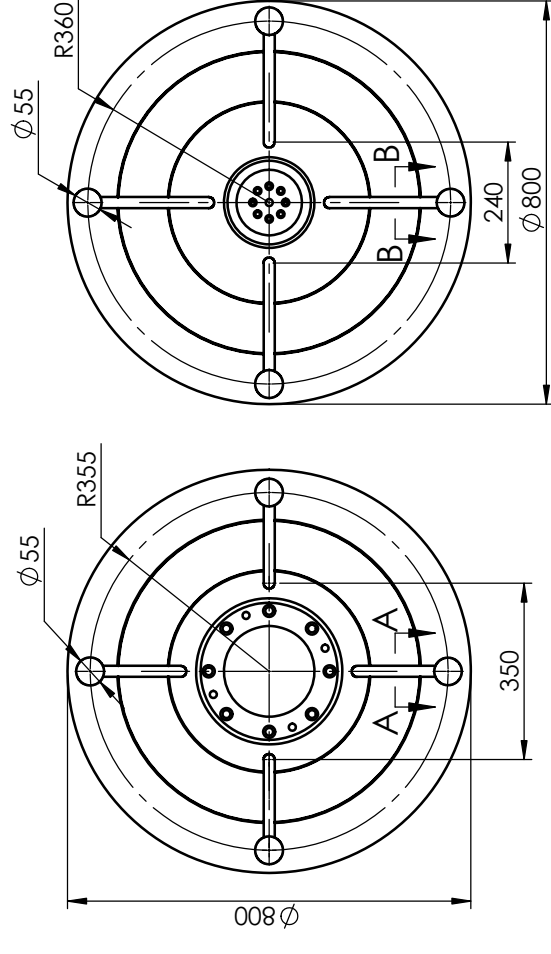
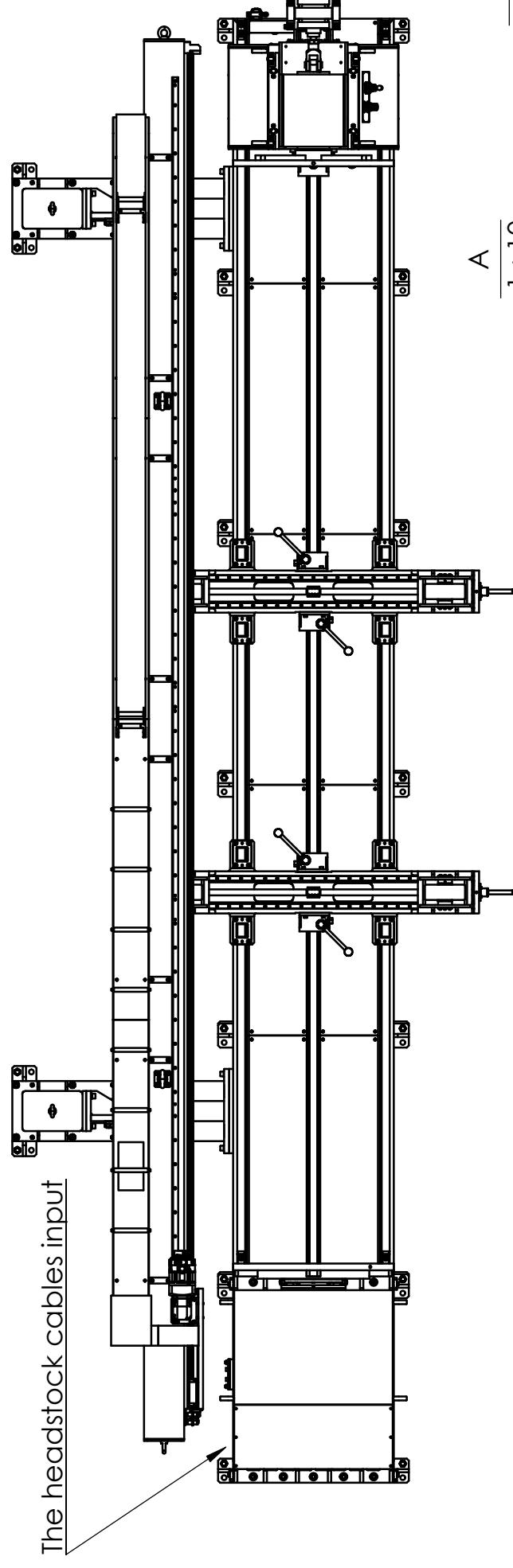
A4 Sheet 1 / 1

Drawing: Pneumatic diagram, tailstock

Scale: 1:1

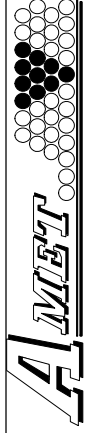
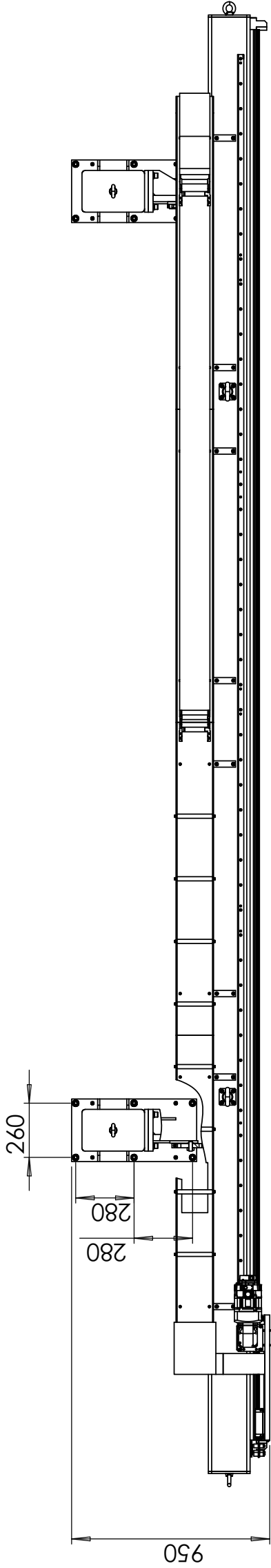
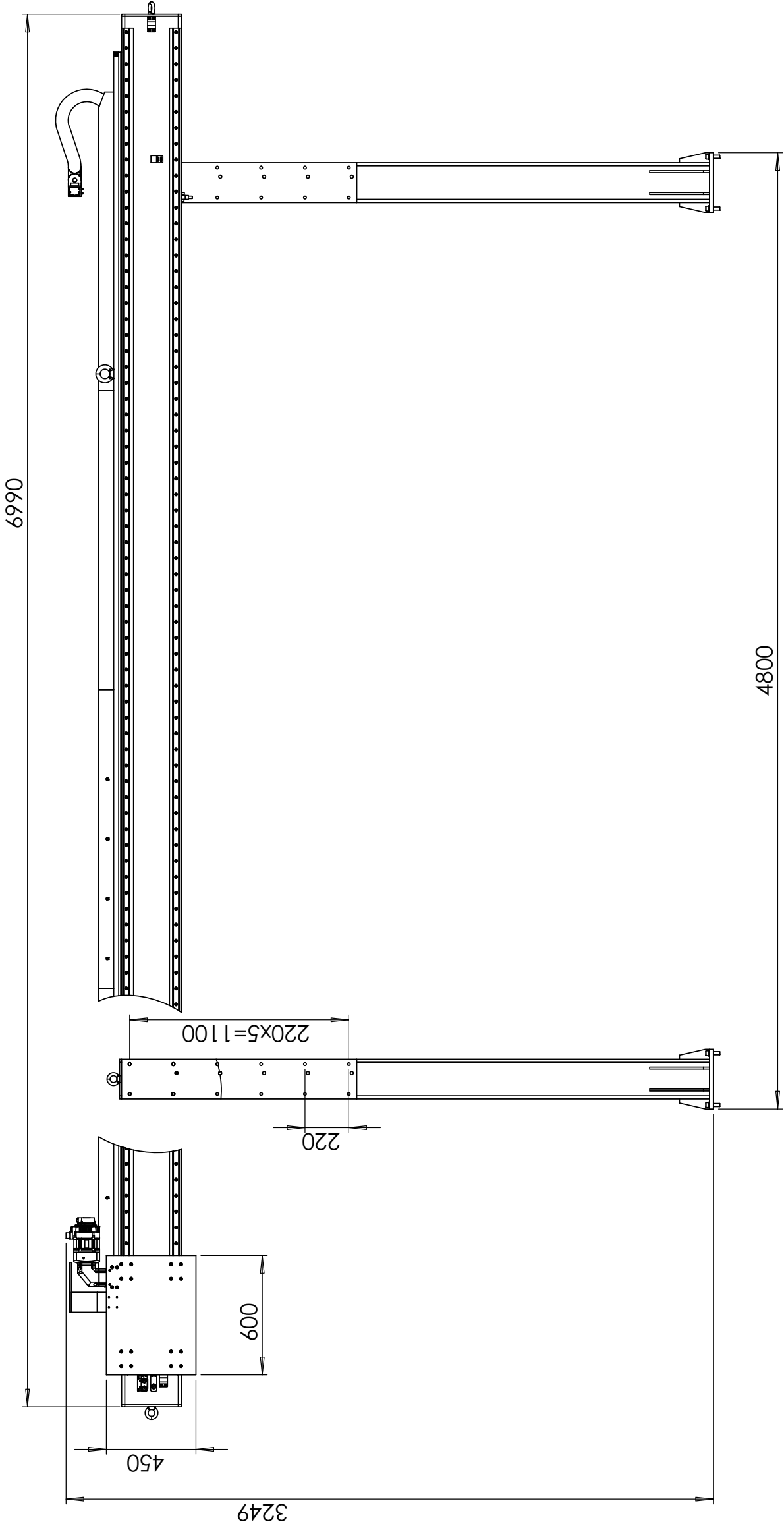


The pressurized air input

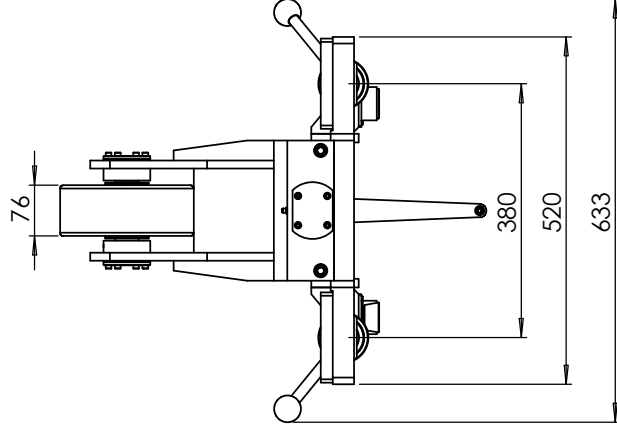


The carriage drive motor: YASKAWA SGMGV-09D.
The headstock rotation drive motor: YASKAWA SGMGV-09D (with brake).
The support roller can handle part diameters ranging from $\phi 181.5\text{mm}$ to $\phi 2100\text{mm}$.

	Drawn:	
	Checked:	
	Date:	2015/3/12
	Project:	P14024-LY
Weight:	6563.09	Kg
Sheet:	1 / 1	
Scale:	1:30	



Drawn by:		
Checked by:		
Date:	2015/3/12	
Project:	P14024	Weight: 1635.34 Kg
Sheet /	A 3	
Scale:		



Power Supply Module

Amphenol
10 pin connector
PT06A-12-10S
Female cable end

Controller Cable

Amphenol
10 pin connector
PT01A-12-10P
Male Cable

Retractable Cable is
hard wire into
Controller with CGB

2ft Retractable Cord

24 Pin CPC

Power Supply/Sensor Cable

Fronius
4000
CMT

Beckoff Interface
Module

J1

CAN H

CAN L

0V

+24V

120 ohm

Can H

Can L

0V

24V

16" length

16 pin minifit
female
39-01-2160

Extension Cable from Fronius Power Supply
to Fronius Water Recirculator

16 pin minifit
male
39-01-2161

Note*

0 ohm resistor is
place on R1 for
can bus shield gnd

CAN Buss
Expansion
Board

J3

Can High

Can Low

2 pin
black molex

1

4

16

15

GND

1

4

J4

6 pin Microfit on
Expansion Board

Current FB-

Current FB+

GND

ISO Com

23

12

11

13

9

14

7

8

24

20

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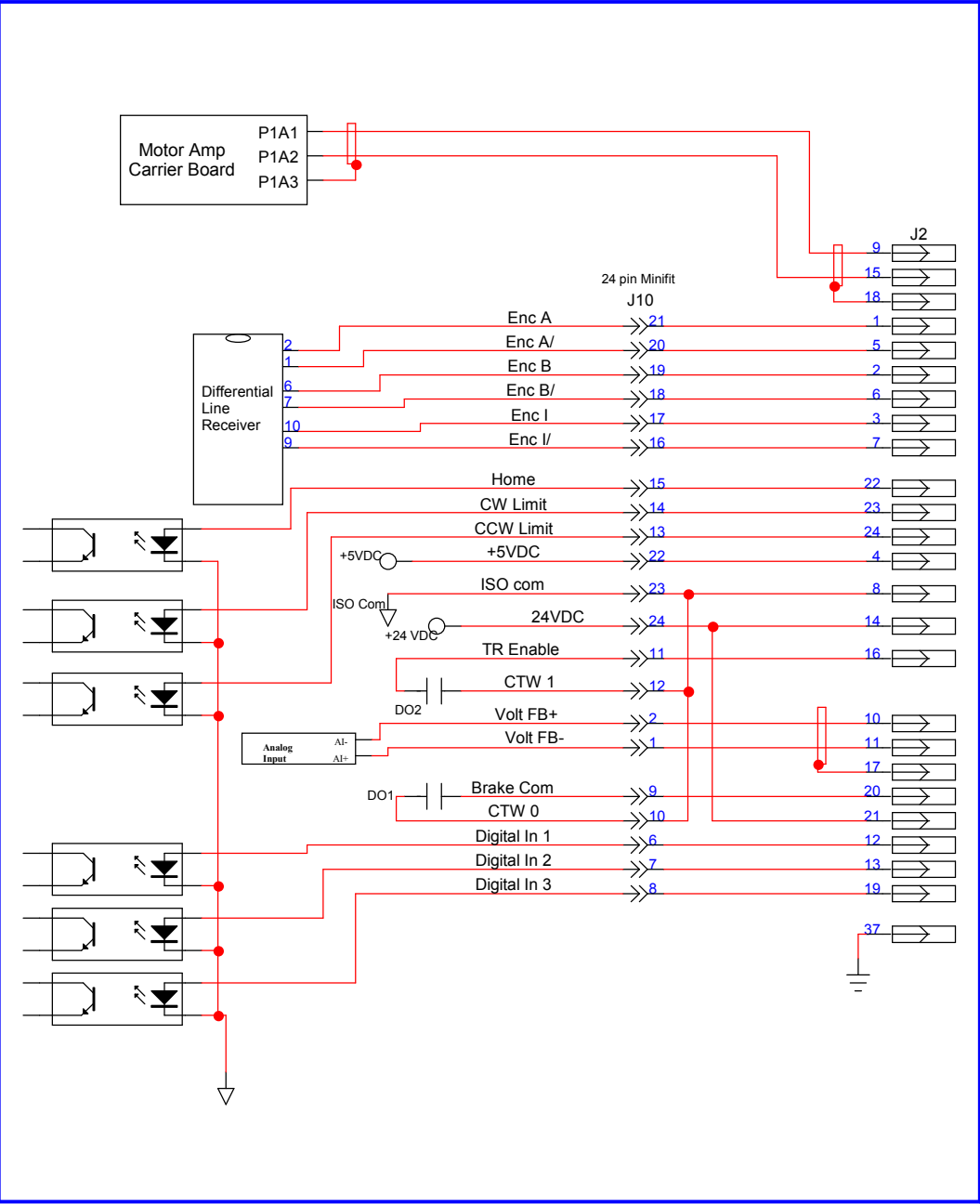
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Modified: 12/2/2015

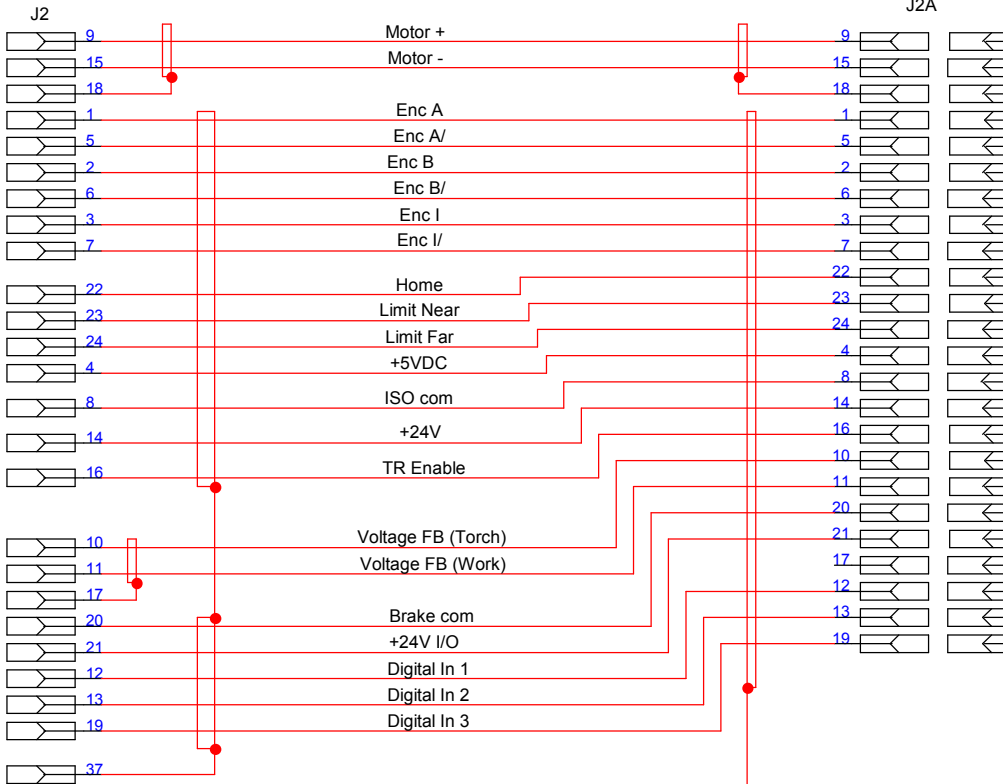
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PO#: 162053

Dwg. Name: PS Module
Project: CMS01 V1.0.cct

Z-Axis

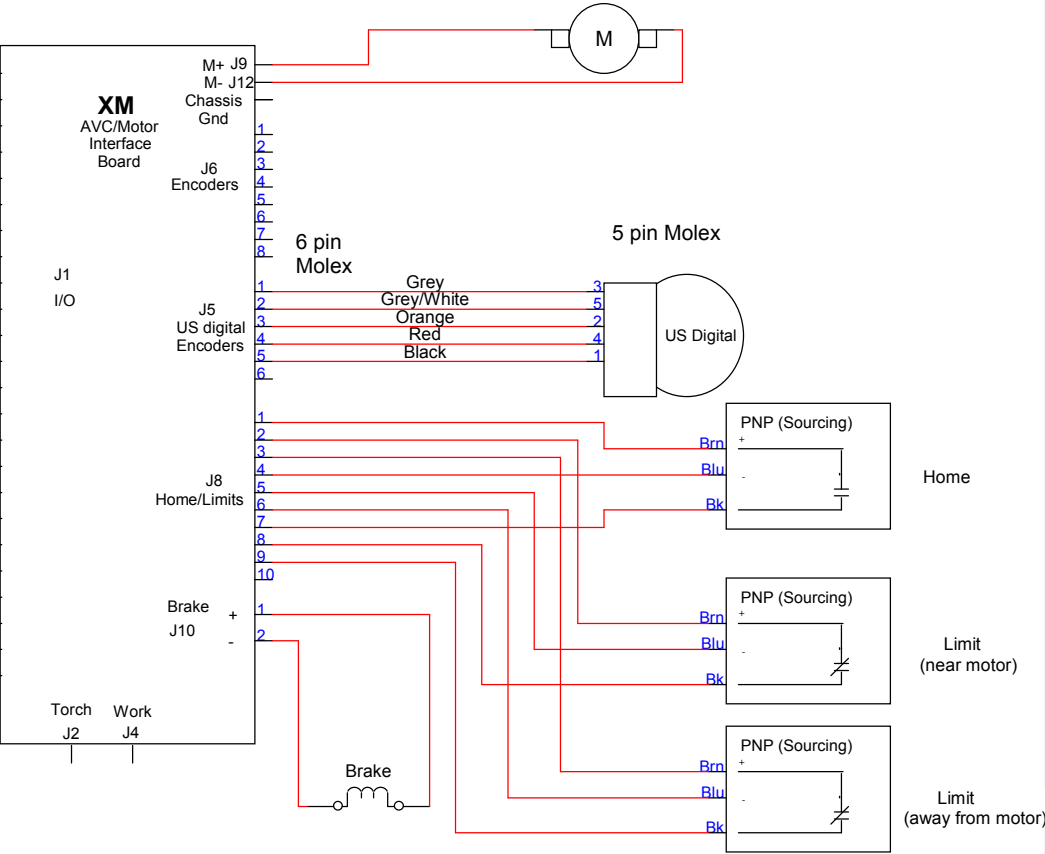


37 Pin CPC



Shields stored

24 Pin CPC



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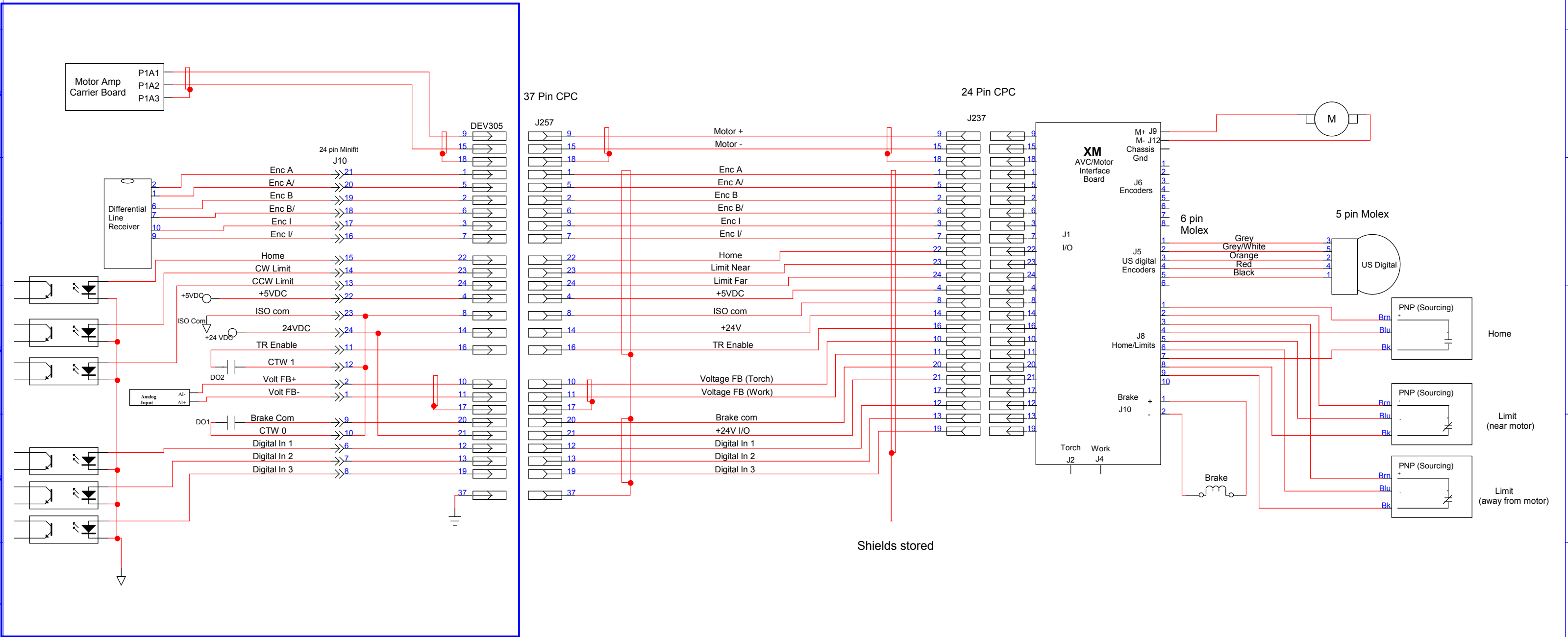
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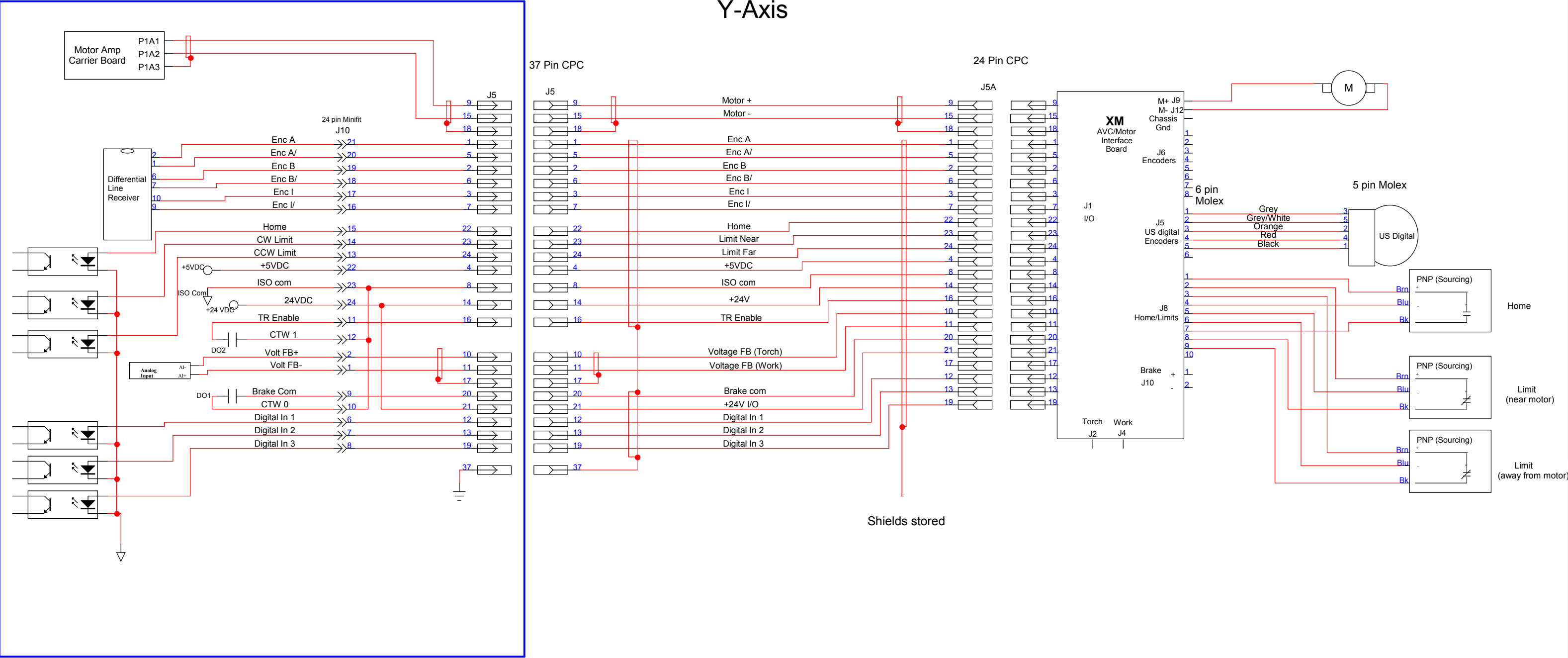
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PO#: 162053

Dwg. Name: Z-Axis
Project: CMS01 V1.0.cct

OSC-Axis

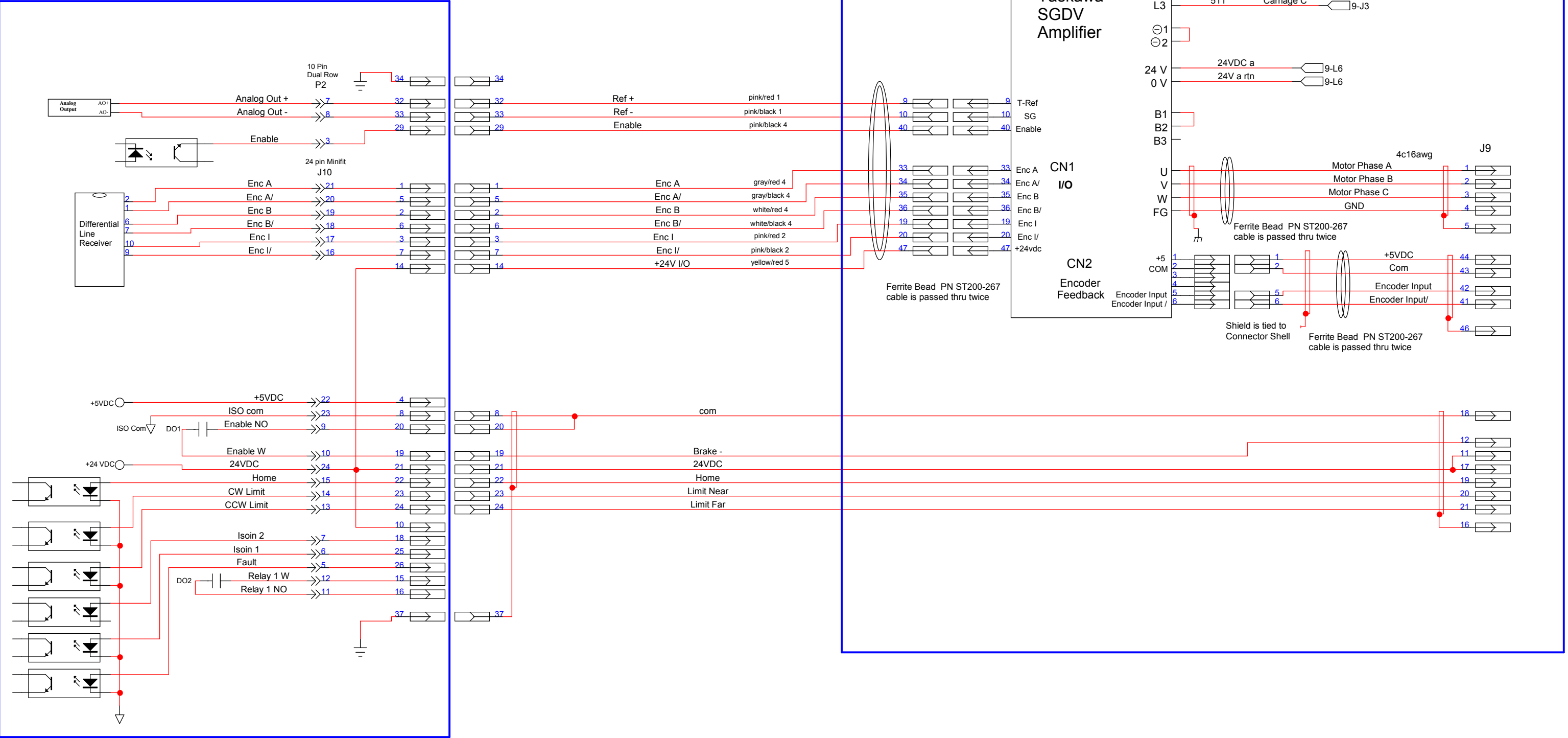


Y-Axis



X-Carriage

PD Cabinet



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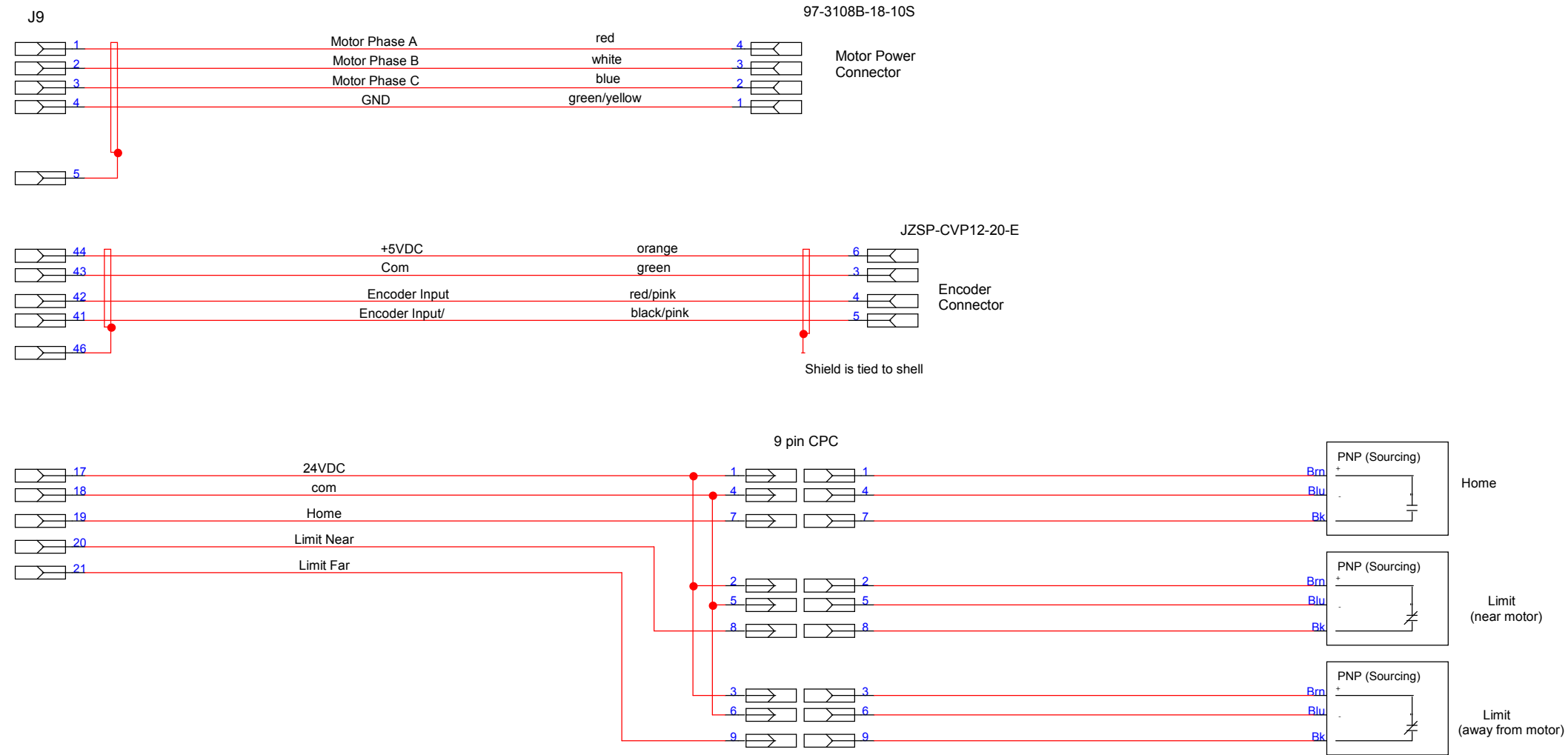
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Date: 11/12/2014
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Dwg. Name: X-Carriage
Project: CMS01 V1.0.cct

Carriage Cables



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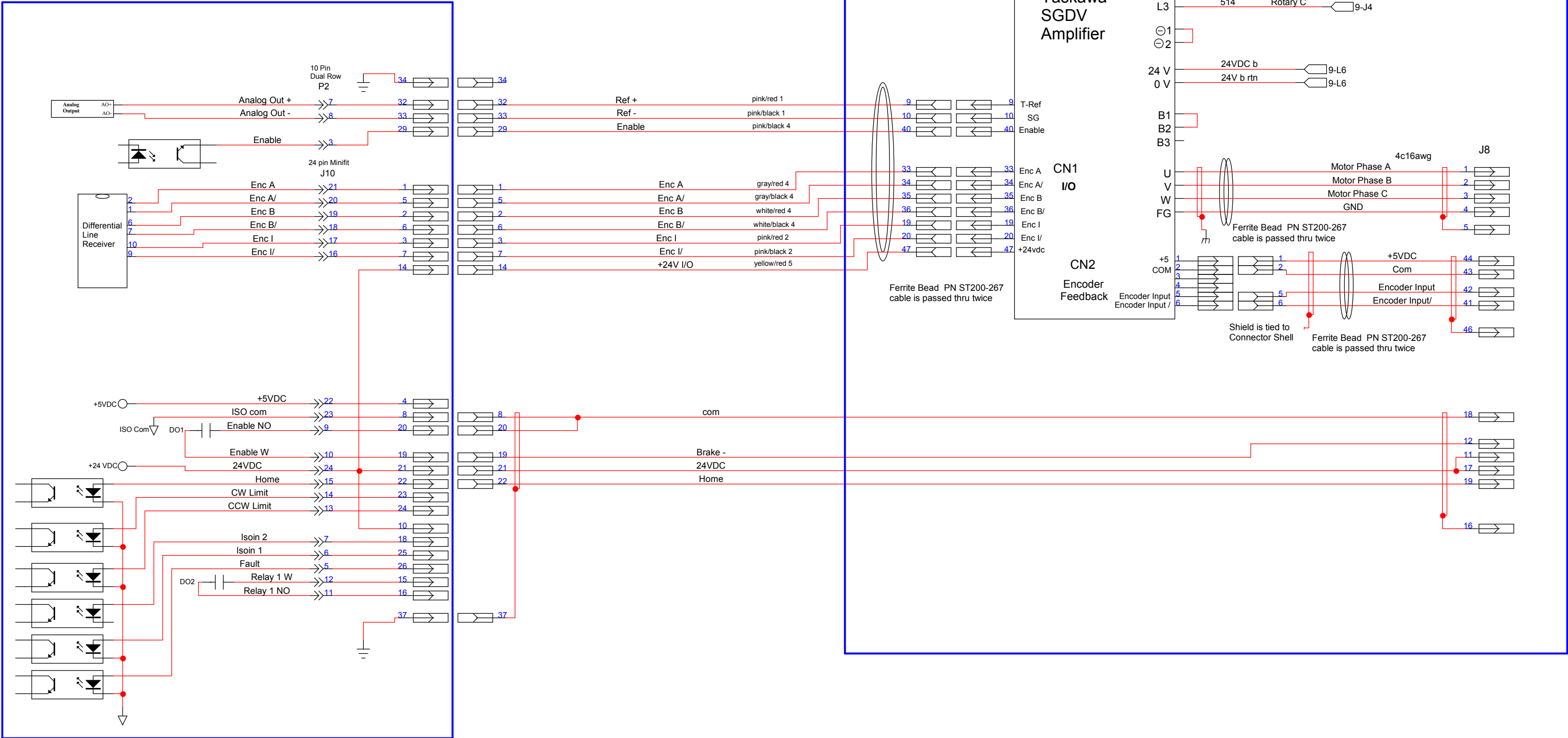
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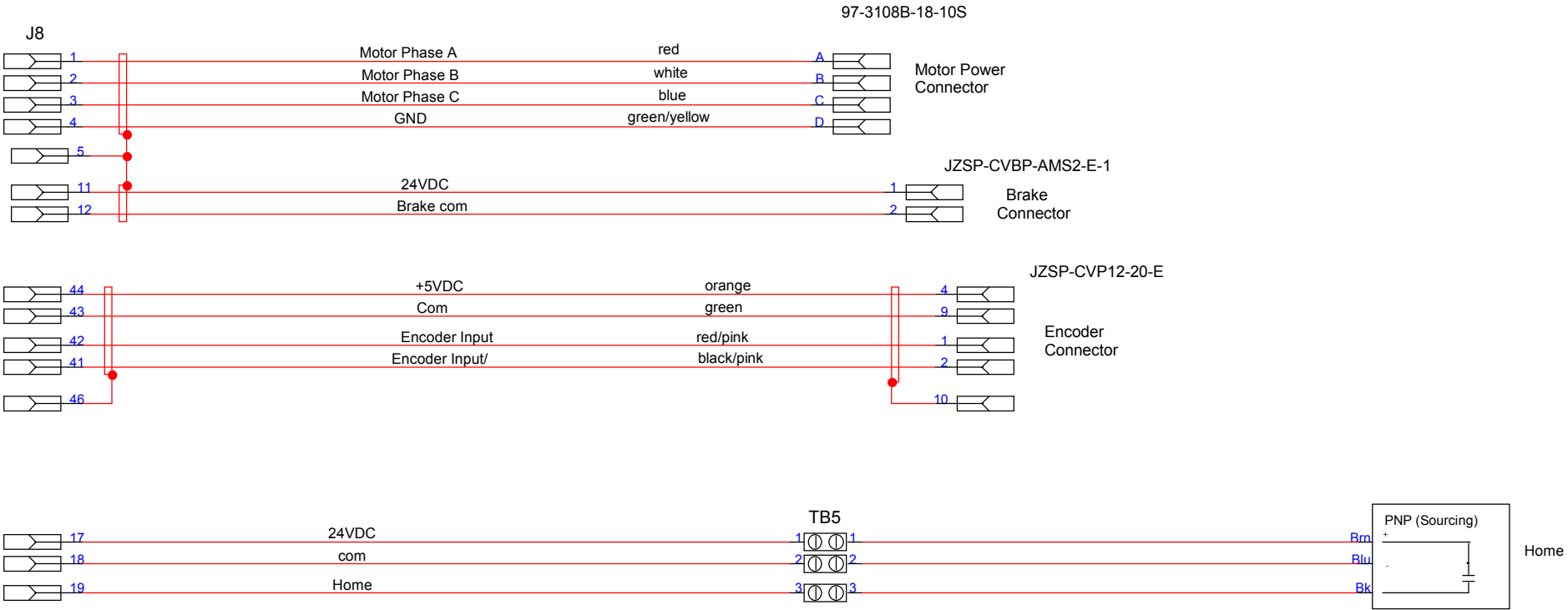
Dwg. Name: Carriage Cables
Project: CMS01 V1.0.cct

X-Rotary

PD Cabinet



Rotation Cables



Cable Function	Length in feet
PS Modules to Fronius	10
Z-Axis	76
Y-Axis	75
X-Osc	75
X-Carriage Module to Yaskawa	5
J9 to Carriage Motor	70
X-Rotary Module to Yaskawa	7
J8 to Rotation Motor	28
Controller	40

