

Cyl-Sonic Micro



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1 Introduction

1.1 Cyl-Sonic Micro at a Glance

The Nordco DSP500 Micro Ultrasonic Cylinder Inspection System has been designed to conduct a full-body test of a gas cylinder's integrity, with the ultrasonic echoes generated by the weld automatically masked out under operator control. It is an original product of Nordco Rail Services and Inspection Technologies of Shelton, Connecticut. This document, both the printed hard-copy and the on-line help file, constitutes the parts book for the DSP500 Ultrasonic Cylinder Inspection System.

The equipment, electronics, and methods discussed herein are proprietary and are covered by the following Nordco U.S. and foreign patents and other patents pending:

4,004,455, 4,222,275, 4,229,978, 4,429,576, 4,487,071, 4,615,218, 4,763,526, 4,785,668, 4,872,130, 1,031,194 (Canada), 8,503,345.4(EPO)

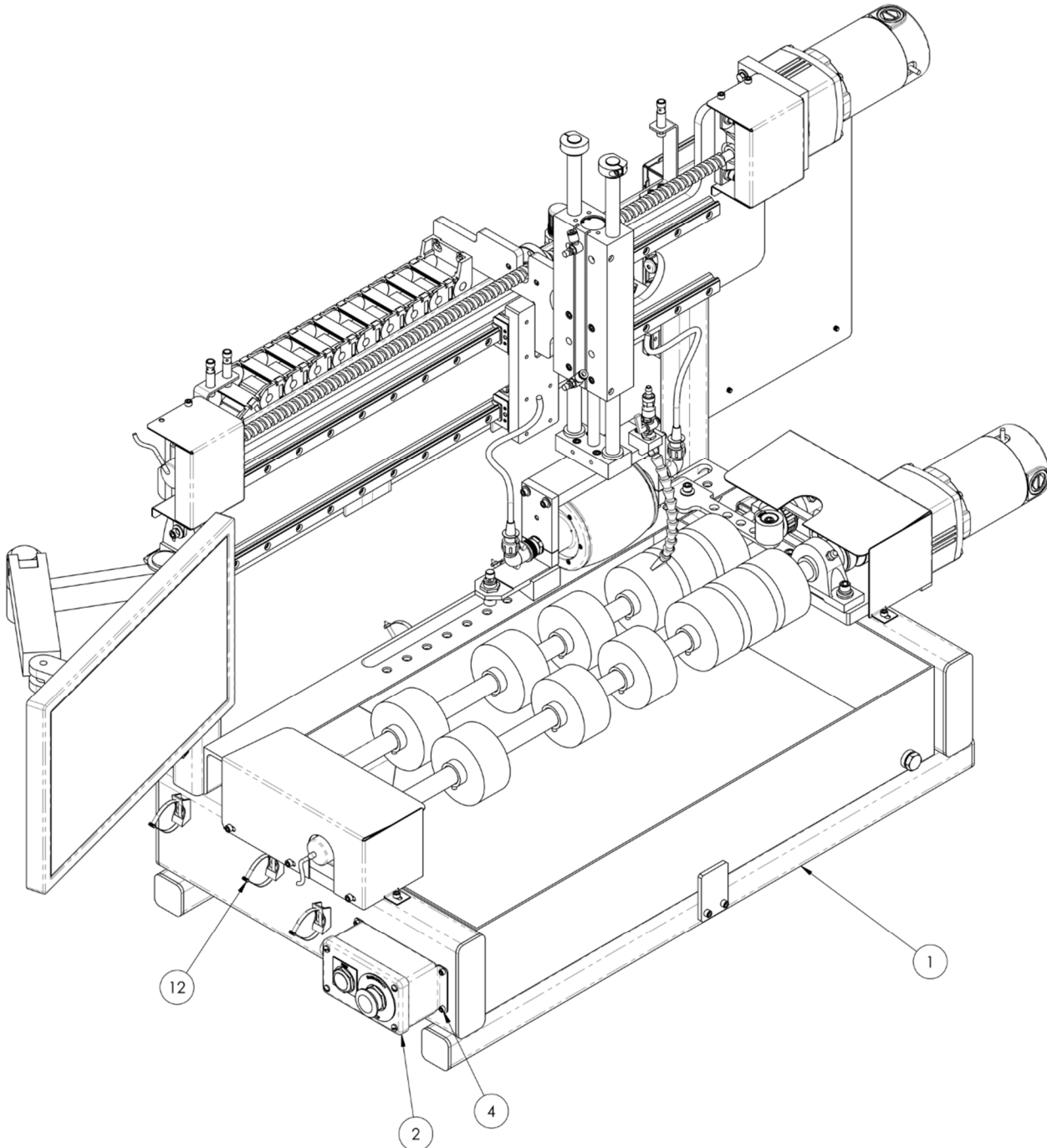
The Nordco DSP500 system, including the transducer wheel assembly mounting mechanics, was designed and manufactured by Nordco Rail Services and Inspection Technologies (1 Waterview Drive, Suite 102A, Shelton, CT 06484), a business unit of Nordco, Inc.

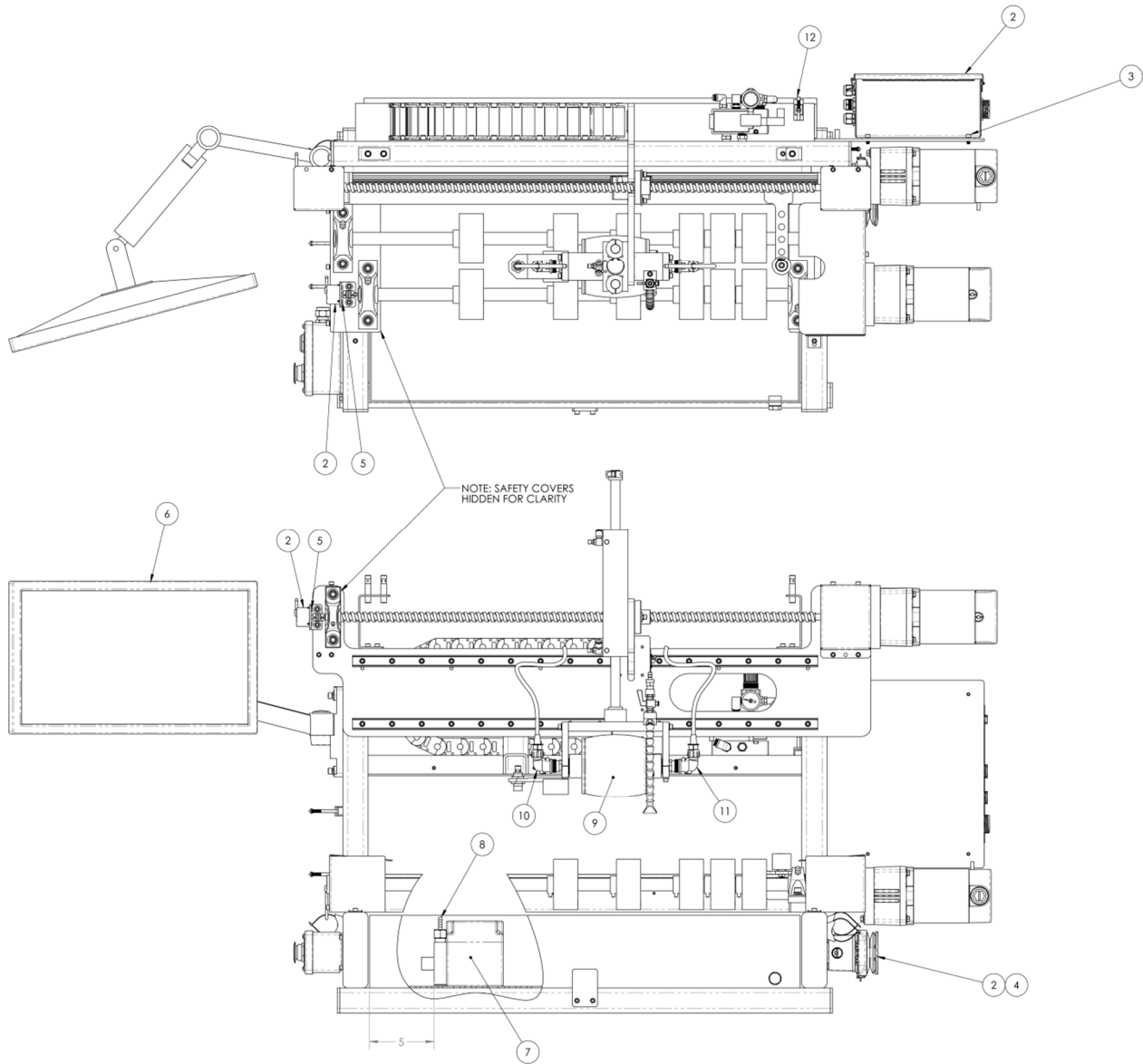
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2 Customer Service & Spare Parts

2.1 1104814 – ASSY, BENCHTOP FRAME COMPLETE





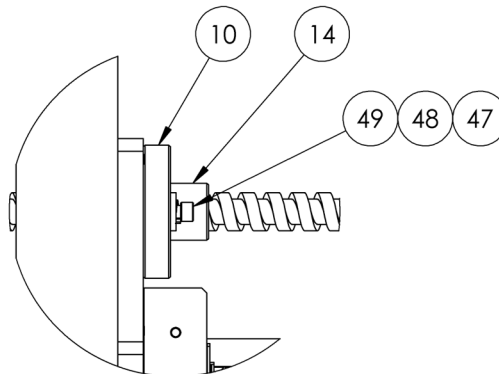
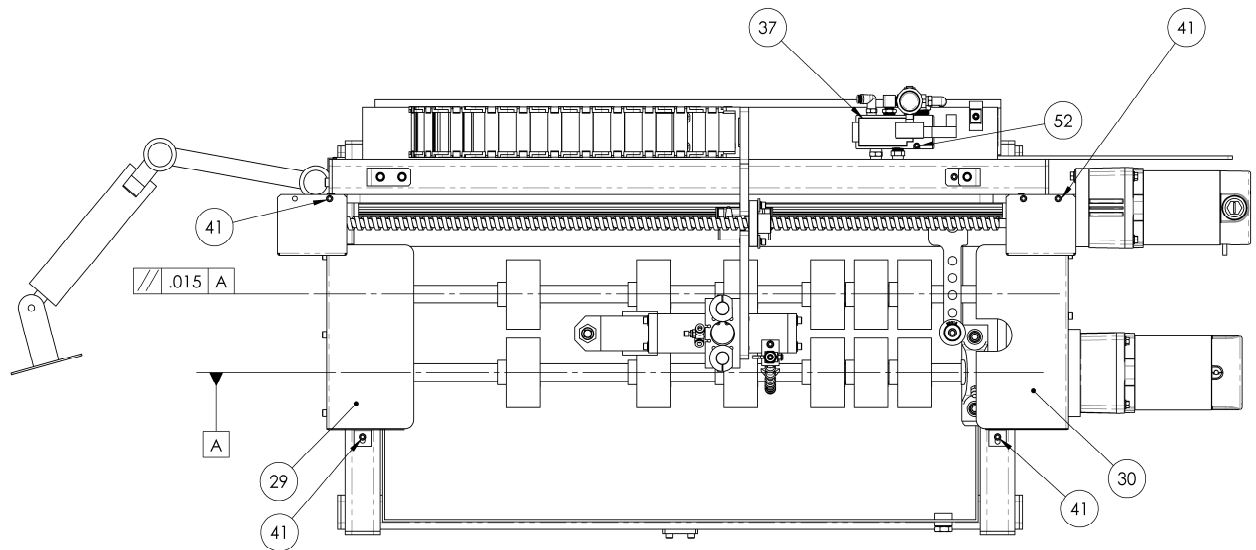


ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	1102504	ASSY, BENCHTOP FRAME	1
2	6001028	ASSY, JUNCTION BOX, BT	1
3	SHCS_SS-0.25-20x0.500	SCREW, SHCS 1/4-20 x 0.50 LG 18-8 SS	4
4	SHCS_SS-10-24x0.500	SCREW, SHCS, 10-24 X .5 LG, SS	6
5	SHCS_SS-M3-0.5X10	M3 X 0.5 X 10mm. LG. SOC. HD. CAP SCR. (METRIC)	4
6	1103686	MONITOR, 21.5IN, LCD, 1920x1080, 1MS	1
7	7000373	PUMP, WATER, BT/LC SYSTEMS	1
8	1105123	FITTING, HOSE,	1
9	1000259	ASSY, RSU 4.5IN, CYL MICRO, 9CH	1
10	1102873	ASSY, CBL, WHEEL, 5 PIN 90 DEG TO 4 LEMO, 20FT	1
11	1102874	ASSY, CBL, WHEEL, 6 PIN 90 DEG TO 5 LEMO, 20FT	1
12	1104813	TIE, CABLE	11
13	*1104700	TUBE, NYLON, 3/8IN OD, BLACK (NOT SHOWN)	10FT
14	*8001098	TUBE, NYLON, 1/4IN OD, BLACK (NOT SHOWN)	11FT
15	*2002090	HOSE, RUBBER, 1/2IN OD, BLACK (NOT SHOWN)	11FT
16	*1103775	CBL, POWER, BLK, 20FT (NOT SHOWN)	1
17	*7000305	CBL, SVGA, BLK (NOT SHOWN)	1

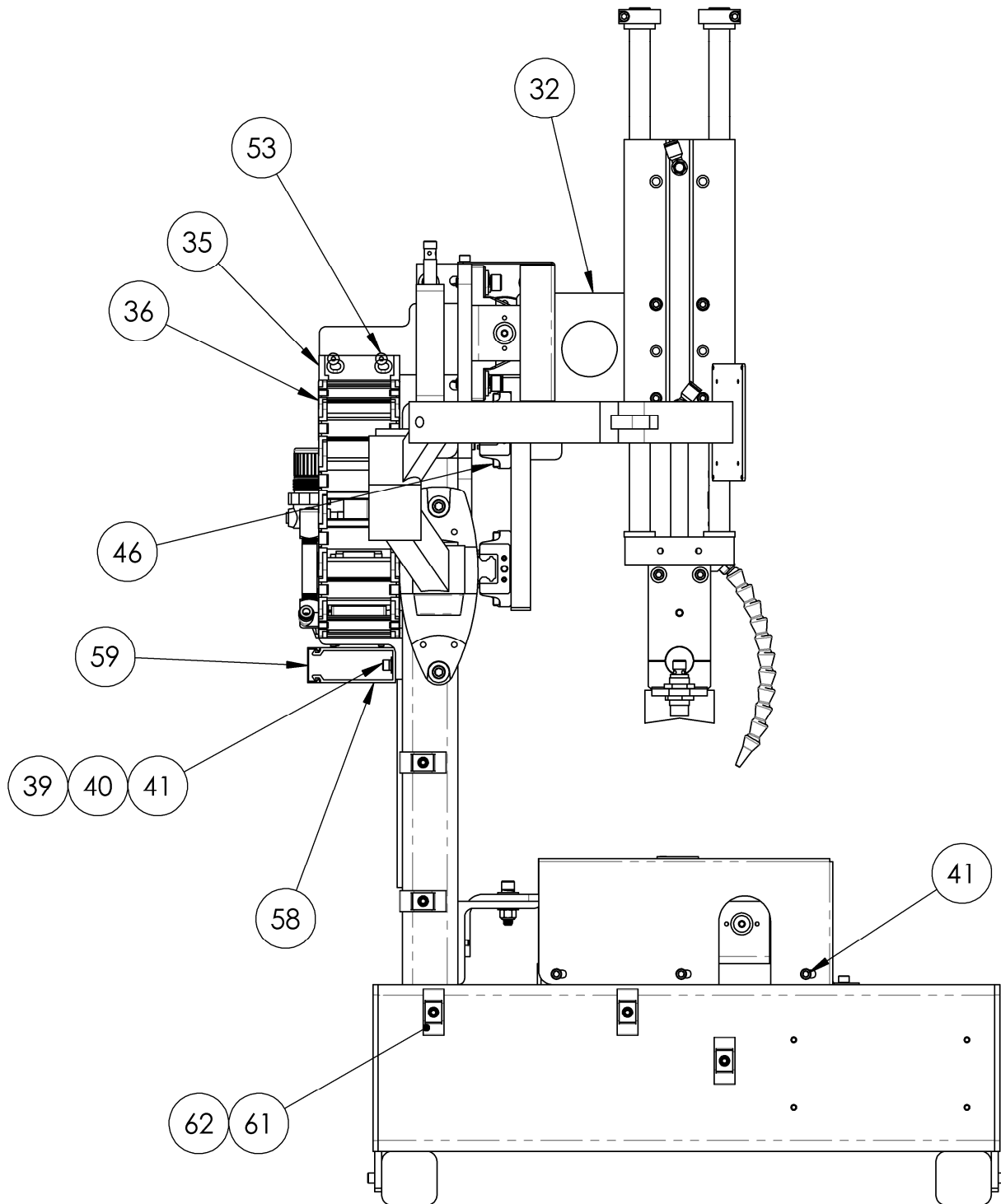
* = Not shown in figures.

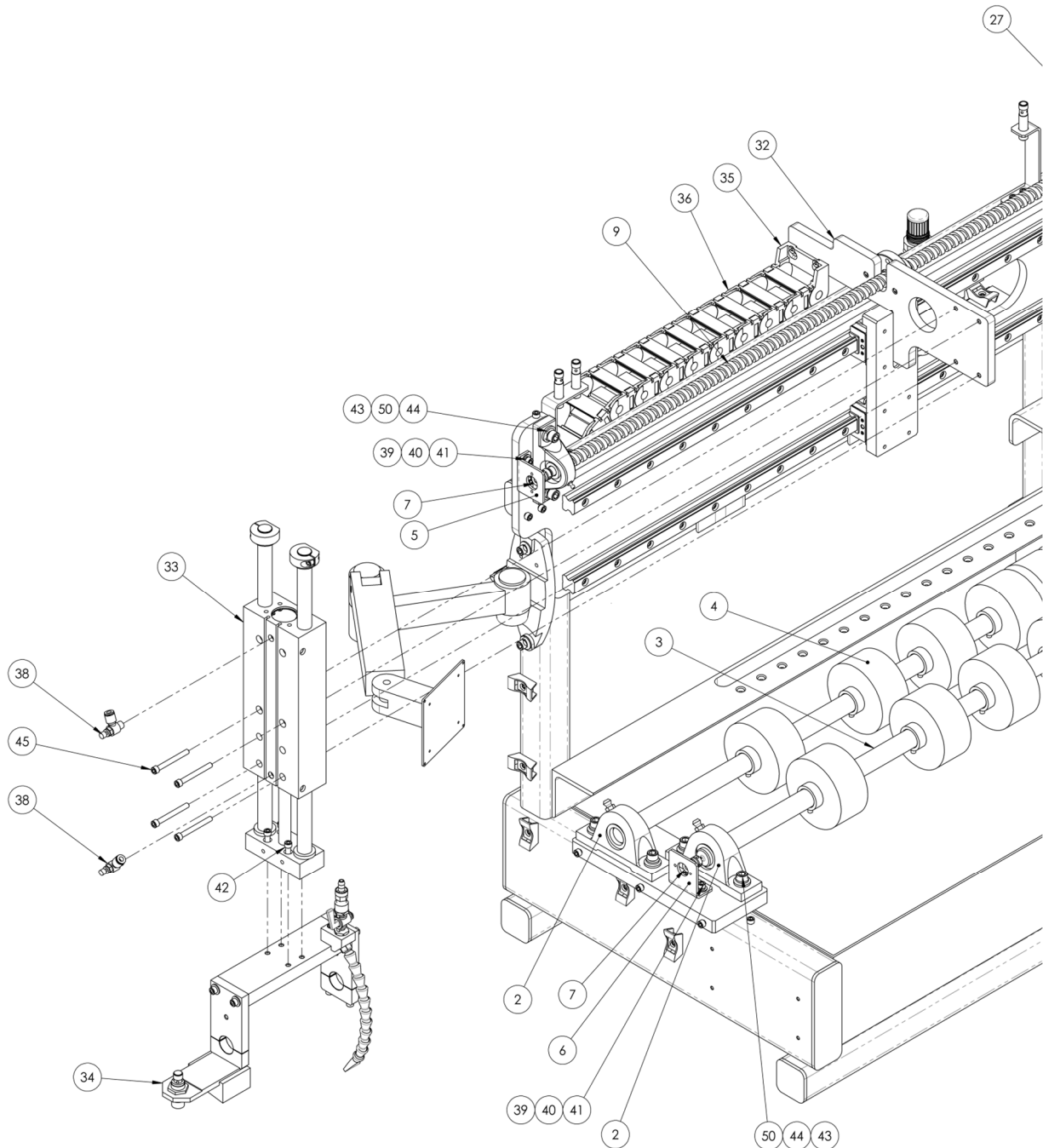
SEE 6001028 FOR PROX CABLES AND FRAME WIRING NOT SHOWN

2.2 1102504 – ASSY, BENCHTOP FRAME

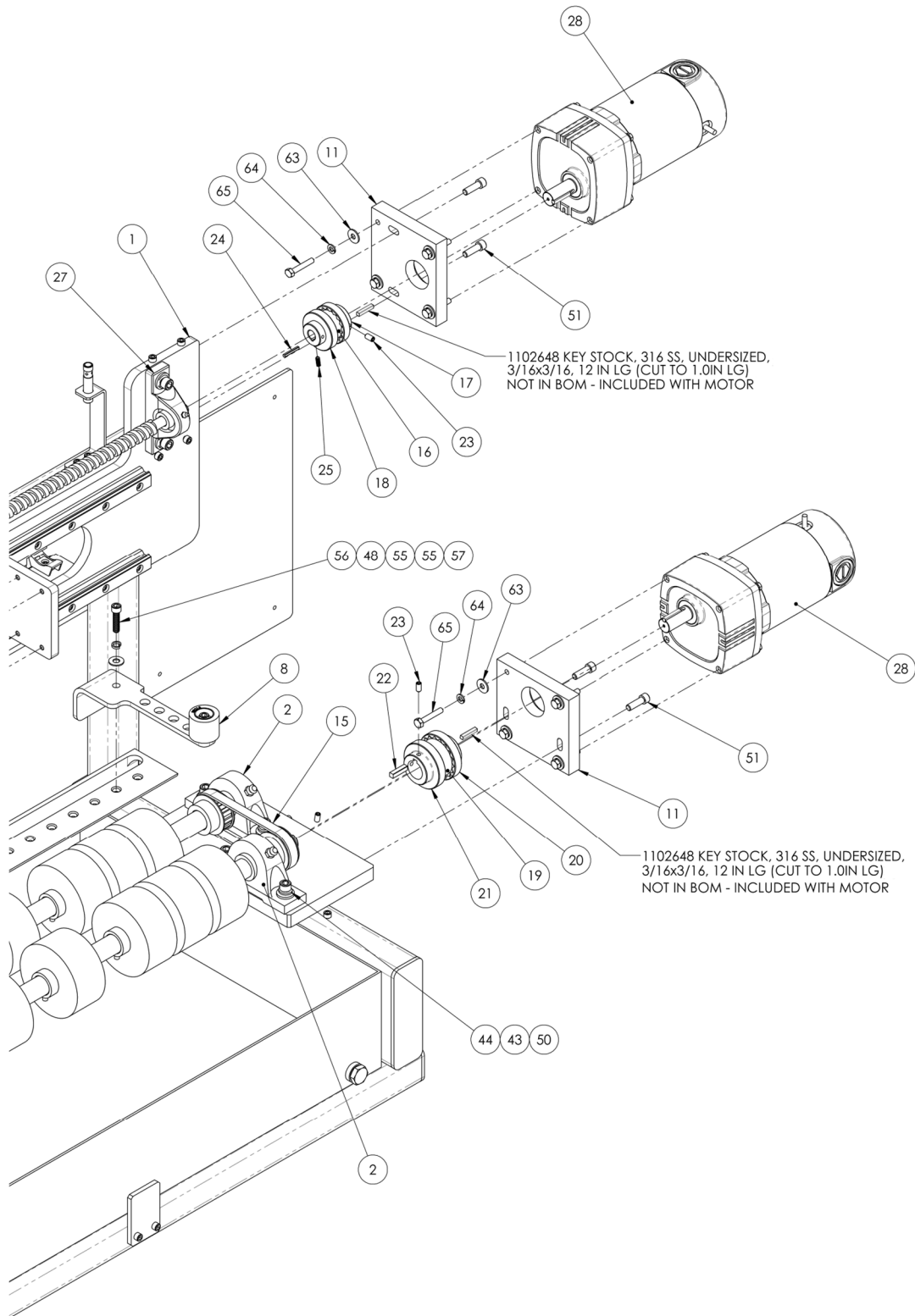


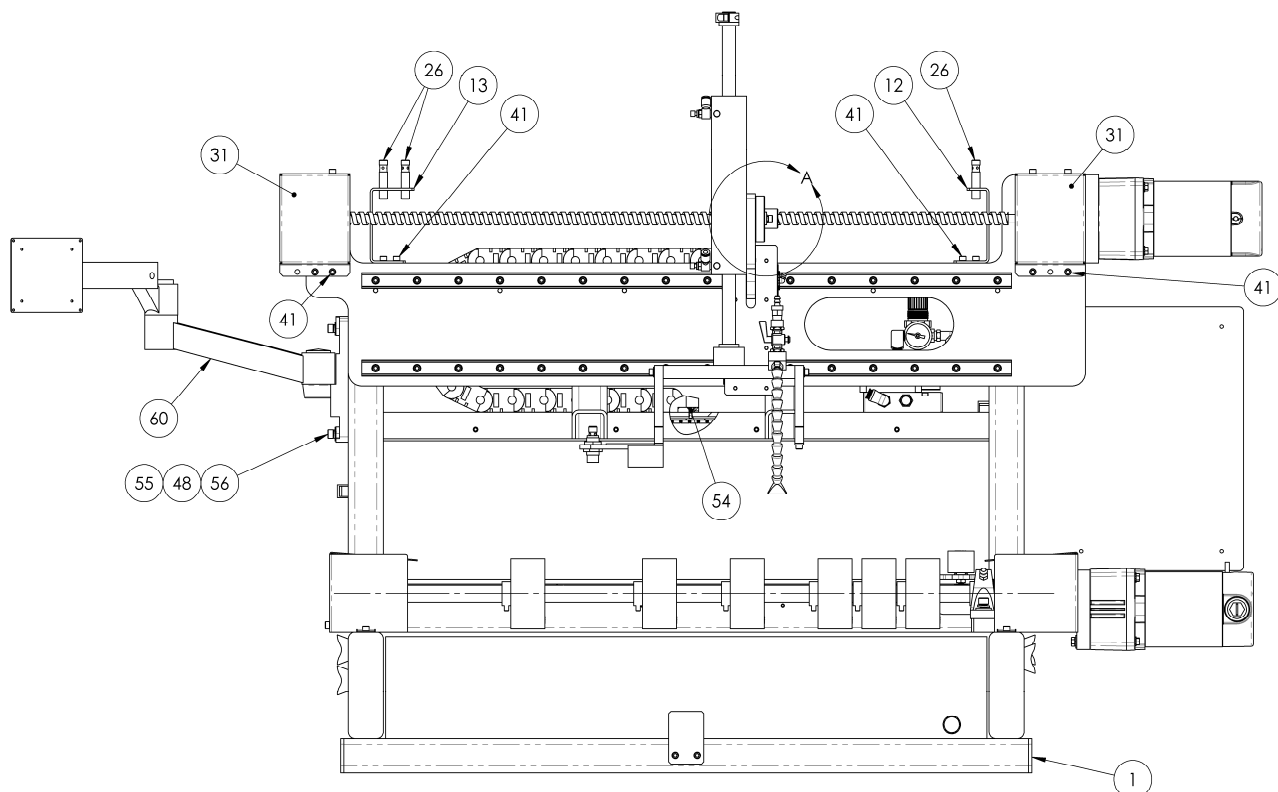
DETAIL A
SCALE 1 : 3





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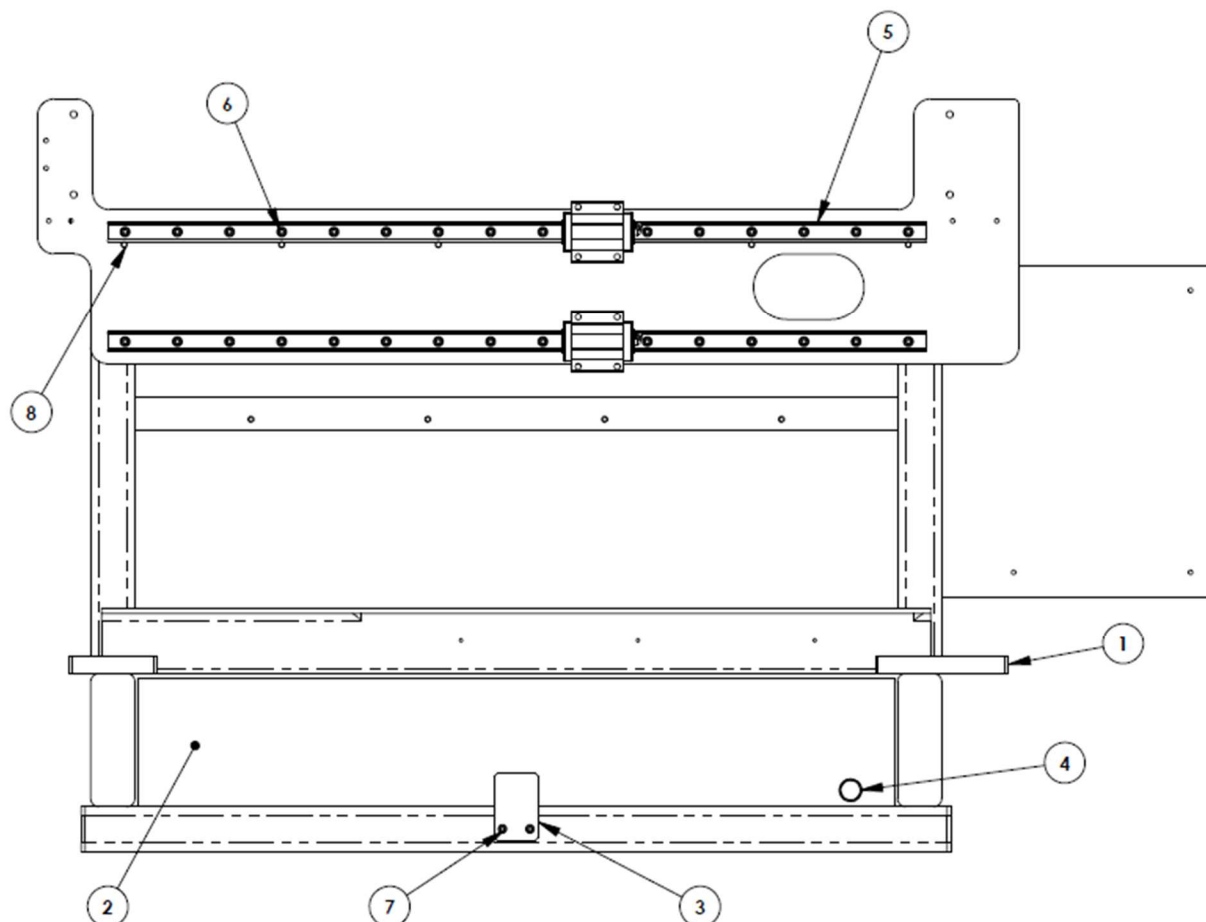


ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1104506	ASSY, FRAME	1
2	2001079	PILLOW BLOCK BRNG	4
3	1100471	ASSY, SHAFT, SHORT	1
4	1100472	ASSY, SHAFT, LONG	1
5	6001018	ASSY, ENCODER & BRKT, LOWER	1
6	6001019	ASSY, ENCODER & BRKT, UPPER	1
7	8001021	COUPLING, 6MM GLASS FIBER	2
8	1100559	ASSY, ADJUSTABLE STOP	1
9	6001003	SHAFT, SCREW	1
10	6001005	MOUNTING FLANGE	1
11	1104860	PLATE, LARGE MOTOR MOUNT, UNIVERSAL	2
12	6001020	BRACKET, PROXIMITY SENSOR, SINGLE	1
13	6001021	BRACKET, PROXIMITY SENSOR, DOUBLE	1
14	8001162	THREADED NUT, ACME	1
15	8001007	BELT,TIMING, 1/2" WIDE	1
16	8001001	COUPLER, SLEEVE, 1-7/8" DIAMETER	1
17	8000262	COUPLER, FLANGE, 2" DIAMETER, 3/4" BORE	1
18	8001003	COUPLER, FLANGE, 2" DIAMETER, 1/2" BORE	1
19	8001004	COUPLER, SLEEVE, 2-5/16" DIAMETER	1
20	8000261	COUPLER, FLANGE, 2-1/2" DIAMETER, 3/4" BORE	1



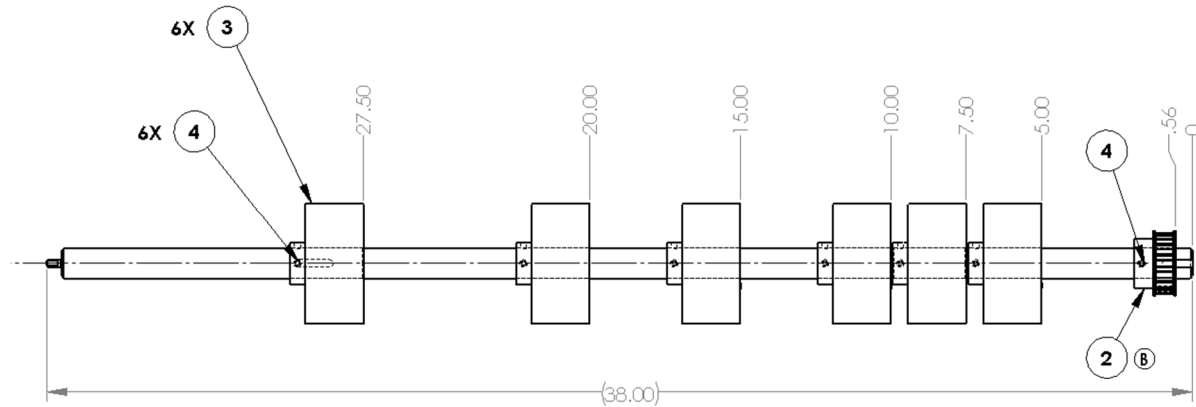
21	8001006	COUPLER, FLANGE, 2-1/2" DIAMETER, 1" BORE	1
22	1102802	.250 X .250 X 1.00 LG. KEY, STNLSS. STL.	1
23	1104561	SCREW, SET, SOCKET, CUP POINT, 1/4-20 X 0.500, SS	3
24	8000299	.125 x.125 x1.00 LG. KEY, STNLSS. STL.	1
25	1104560	SCREW, SET, SOCKET, CUP POINT, 10-24 X 0.500, SS	1
26	8001018	SWITCH, PROX	3
27	8001031	BALL BEARING PILLOW BLOCK	2
28	1104862	ASSY,MOTOR	2
29	1105271	COVER, BRNG, ROLLER IDLER	1
30	1101561	COVER, BRNG, ROLLER DRIVE	1
31	1101564	COVER, BRNG, SCREW	2
32	1104507	WELDMENT, UE HEAD MOUNTING,	1
33	1000964	SLIDE, 8IN STROKE	1
34	1104475	ASSY, RSU WHEEL BRACKET, TLV	1
35	1103541	BRKTS, MOUNTING FOR CBL CARRIER	1
36	1104811	NYLON CBL CARRIER	1
37	1100637	ASSY, PNEUMATICS CONTROLS	1
38	8001304	NEEDLE VALVE	2
39	FW_SS-0.25	WASHER FLAT 1/4" SS	8
40	LWH_SS-0.25	WASHER LOCK HIGH COLLAR 1/4" SS	8
41	SHCS_SS-0.25-20x0.500	SCREW, SHCS 1/4-20 x 0.50 LG 18-8 SS	26
42	SHCS_SS-0.25-20x1.500	1/4-20 X 1.50 LG. SOC. HD. CAP SCR.	4
43	1000894	3/8 I.D. X 1.0 O.D. X .12 THK. WASHER, STNLSS. STL.	12
44	LW_SS-0.38	3/8 LOCKWASHER SS	12
45	SHCS_SS-0.25-20x2.250	SCREW, SHCS, 1/4-20 X 2.25 LG, SS	4
46	SHCS_SS-0.25-20x1.000	SCREW, SHCS 1/4-20 x 1.00 LG 18-8 SS	8
47	1103039	5/16 I.D.X .75 O.D. X .12 THK., WASHER, STNLSS. STL.	2
48	LWH_SS-0.31	WASHER, HIGH COLLAR SPLIT LOCK, 5/16, SS	5
49	SHCS_SS-0.25-20x1.250	SOCKET HEAD CAP SCREW	2
50	SHCS_SS-0.38-16x1.250	SCREW, SHCS 3/8-16 x 1.25 LG 18-8 SS	12
51	SHCS_SS-0.31-18x1.000	SHCS 5/16-18 x 1.00 LG 18-8 SS	4
52	SHCS_SS-10-24x1.250	SHCS #10-24 x 1.25 LG 18-8 SS	2
53	FHSHCS_SS-10-24x0.750	SCREW, FHSHCS, 10-24 X 3/4 IN, SS	2
54	FHSHCS_SS-10-24x0.625	SCREW, FHSHCS,10-24 X 5/8 LG, SS	2
55	FW_SS-0.31	FLAT WASHER, 5/16 BOLT SIZE, SS	4
56	SHCS_SS-0.31-18x1.250	SCREW, SOCKET HEAD CAP, 5/16-18 x 1.25IN LG, SS	3
57	1102562	HEX NUT, NYLOCK, 5/16-18, 18-8 SS	1
58	1104370	WIREWAY, PANEL DUCT	36
59	1104374	WIREWAY, COVER, PANEL DUCT	36
60	8001206	ARM, MONITOR	1
61	1104812	MOUNT, CABLE TIE, #10 SCREW, .5IN MAX TIE WIDTH	11
62	SHCS_SS-10-24x0.500	SCREW, SHCSS 10-24 X 1/2 LG, SS	11
63	FW_SS-0.25	FLAT WASHER, 1/4 BOLT SIZE, SS	8
64	LW_SS-0.25	LOCK WASHER, 1/4	8
65	HHB_SS-0.25-28x1.500	BOLT, HEX HEAD, 1/4-28 X 1.5 LG SS	8

2.3 1104506 – ASSY, FRAME , BT



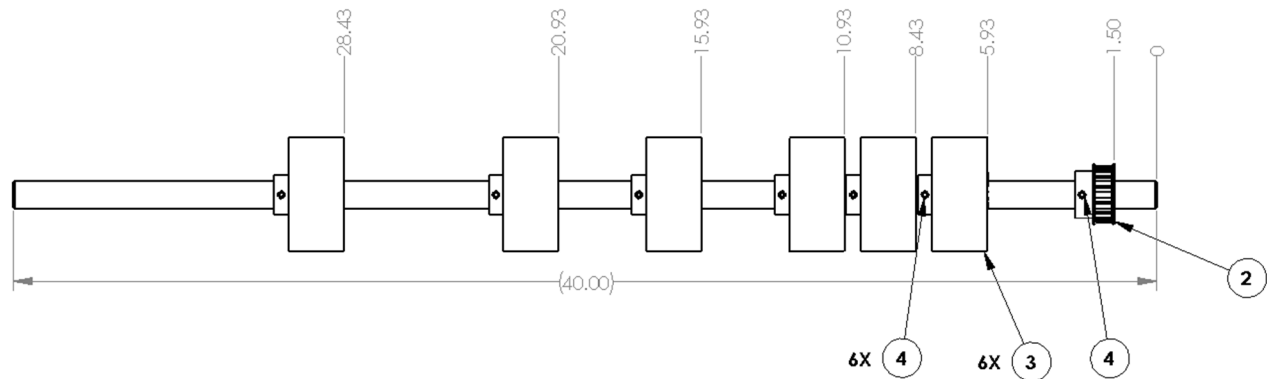
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1104505	WELDMENT, MICRO FRAME	1
2	7000290	PAN, WATER COLLECTION	1
3	6001023	CLIP, WATER PAN	2
4	8001095	HEX HEAD BRASS PLUG	1
5	8001029	RAIL AND BRNG	2
6	SHCS_SS-0.25-20x1.000	SCREW, SHCS 1/4-20 x 1.00 LG 18-8 SS	32
7	SHCS_SS-0.25-20x0.625	SHCS 1/4-20 x 0.625 LG 18-8 SS	4
8	PIN_SS-0.25X0.75	PIN, DOWEL 1/4 X 0.63 LG	6

2.4 1100471 – ASSY, SHORT SHAFT, 12 ROLLER



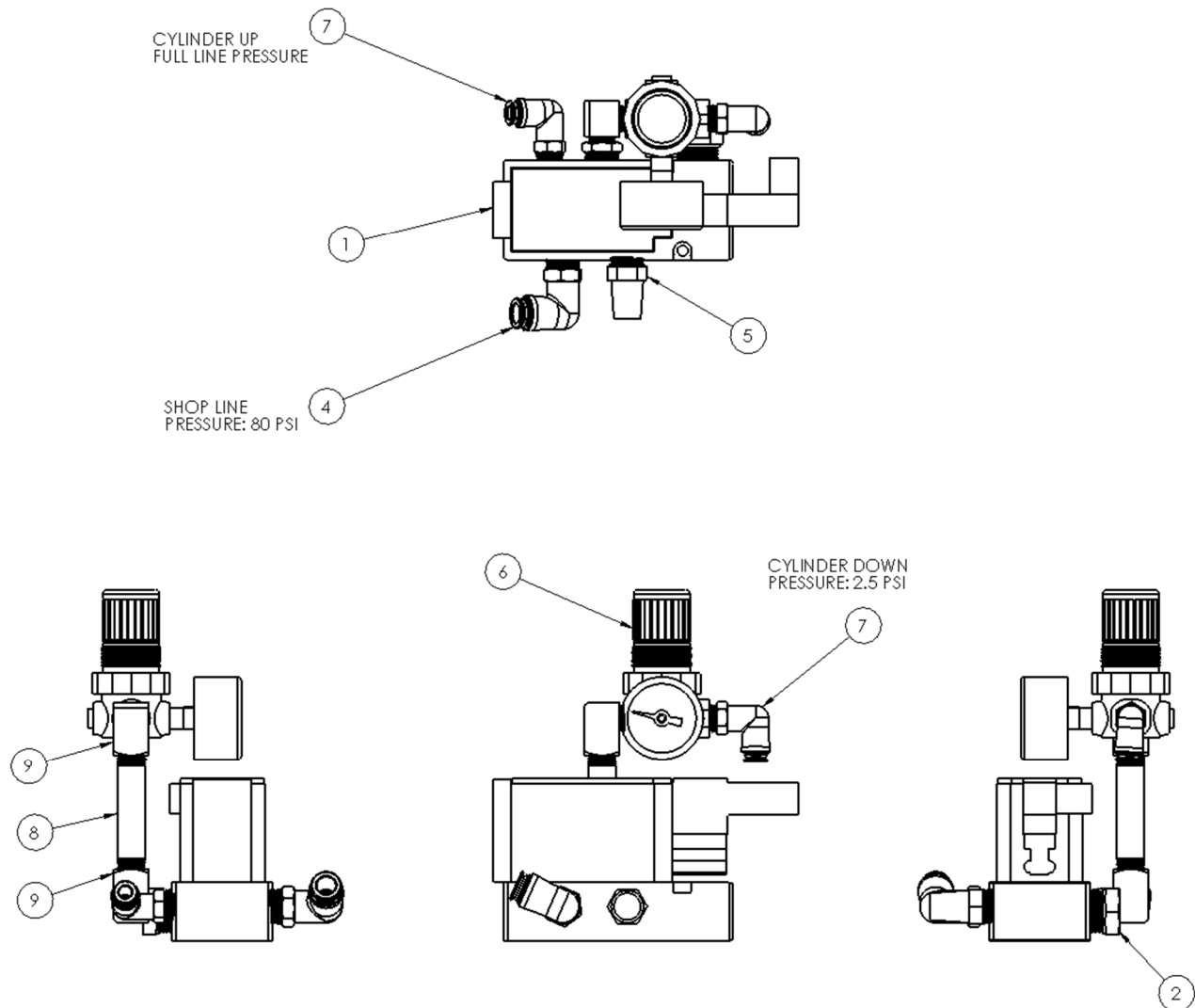
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	6001012	SHAFT, SHORT, FRONT	1
2	8001008	PULLEY, TIMING	1
3	1000591	ROLLER, 4" OD	6
4	1104561	SCREW, SET, SOCKET, CUP POINT, 1/4-20 x 0.5 LG 18-8 SS	7

2.5 1100472 – ASSY, LONG SHAFT, 12 ROLLER



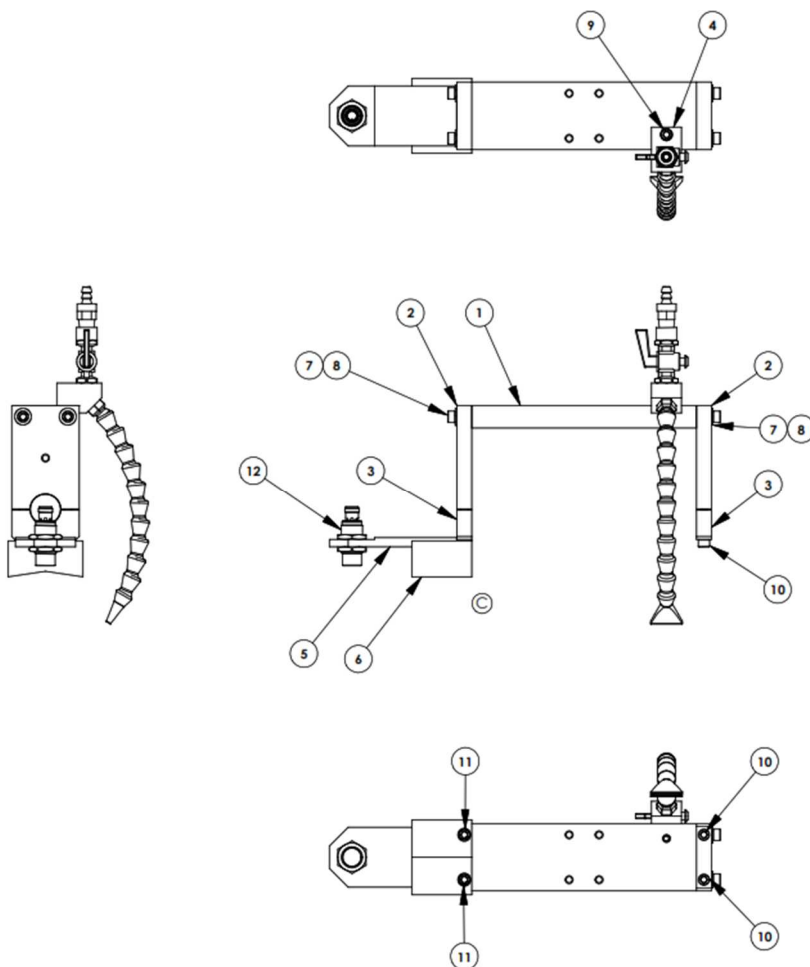
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6001013	SHAFT, LONG, REAR	1
2	8001008	PULLEY, TIMING	1
3	1000591	ROLLER, 4" OD	6
4	1104561	SCREW, SET, SOCKET, CUP POINT, 1/4-20 x 0.5 LG 18-8 SS	7

2.6 1100637 – ASSY, PNEUMATICS CONTROLS



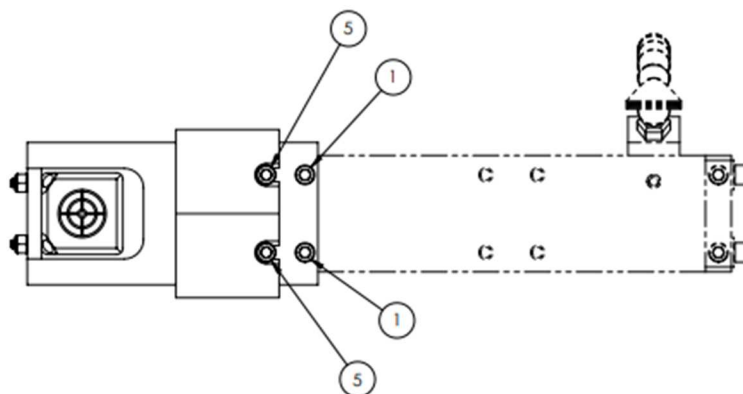
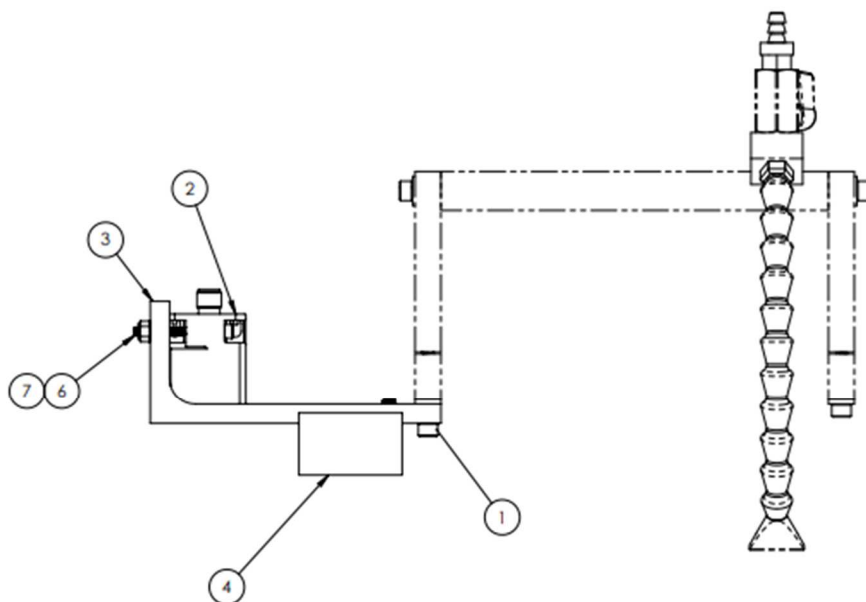
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	8001080	VALVE, PNEUMATIC	1
2	8001095	HEX HEAD BRASS PLUG	1
3	8001093	FITTING, REDUCER BUSHING	1
4	8001097	FITTING, 90 DEGREE SWIVEL	1
5	2003024	FITTING, MUFFLER	1
6	8001023	REGULATOR	1
7	1105873	FITTING, PUSH-ON HOSE	2
8	8001092	FITTING, NIPPLE	1
9	1104489	FITTING, ELBOW	2

2.7 1104475 – ASSY, RSU WHEEL BRACKET, TLV



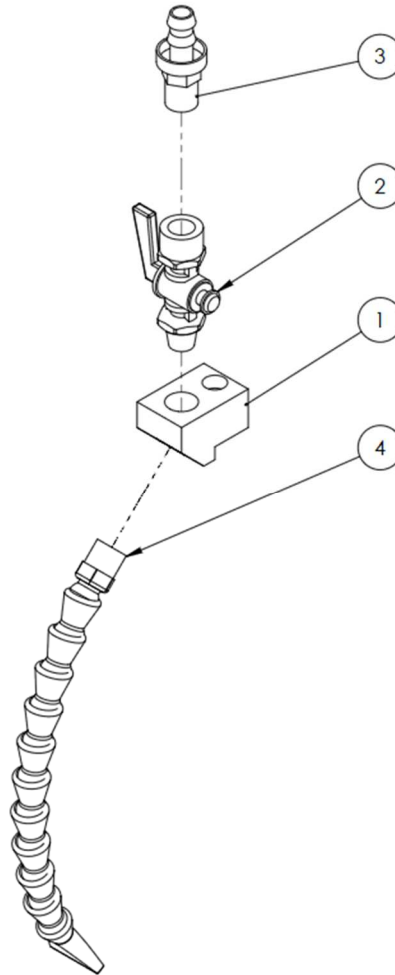
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6001008	PLATE, HEAD MOUNTING	1
2	6001009	PLATE, WHEEL SPACER	2
3	6001010	CAPS, WHEEL SPACER	2
4	1100316	ASSY, WATER BLOCK WITH SHUTOFF	1
5	1103149	SENSOR ARM, TLV	1
6	1103668	GUIDE, WHEEL, TLV COMPATIBLE	1
7	FW_SS-0.25	.25 I.D. X .56 O.D. X .06 THK. WASHER, STNLSS. STL.	4
8	SHCS_SS-0.25-20x1.000	SCREW, SHCS 1/4-20 x 1.00 LG 18-8 SS	4
9	SHCS_SS-0.25-20x1.250	SCREW, SHCS 1/4-20 x 1.25 LG 18-8 SS	1
10	SHCS_SS-0.25-20x1.500	1/4-20 X 1.50 LG. SOC. HD. CAP SCR.	2
11	SHCS_SS-0.25-20X2.250	1/4-20 X 2.25 LG, SHCS, SS	2
12	1102736	SENSOR, INDUCTIVE PROXIMITY, ORG, CYLINDRICAL, NO	1

2.8 1106087 – KIT, MCIS TLV LONG RANGE PROX



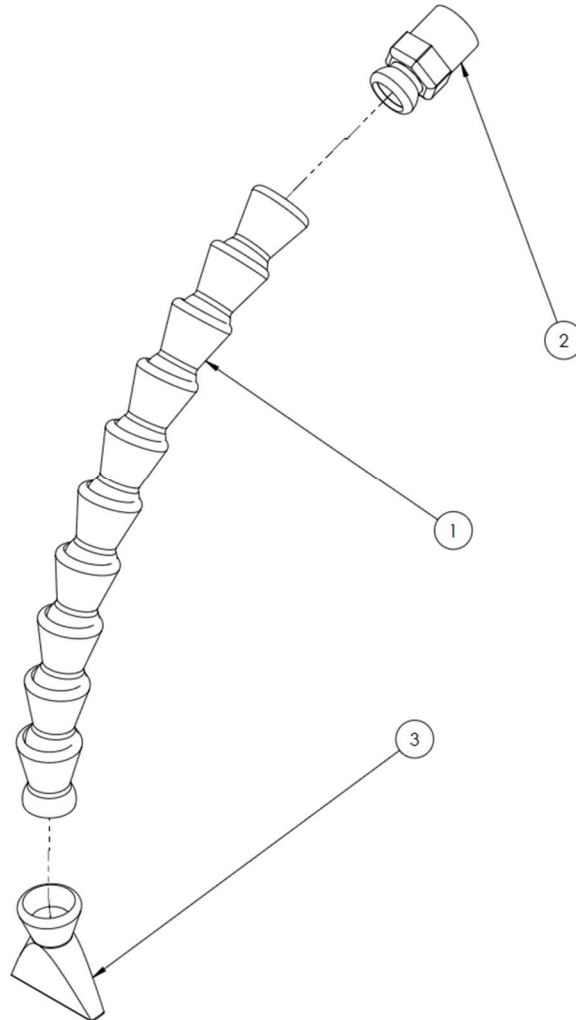
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	SHCS-0.25-20X2.000	SCR, SHCS, SS, 1/4-20 X 2 IN	2
2	1105270	INDUCTIVE PROXIMITY SENSOR, 10-36V DC PNP 35MM	1
3	1105273	90 DEG SENSOR ARM, TLV, BT	1
4	1105274	GUIDE, WHEEL, 90 DEG TLV COMPATIBLE	1
5	SHCS_SS-0.25-20X0.875	SCREW, SHCS 1/4-20 x 0.875 LG SS	2
6	SHCS_SS-8-32X1.75	SCREW, SHCS, 8-32 X 1.75 LG SS	2
7	HNL SS-8-32	HEX NUT, NYLOCK, 8-32, SS	2

2.9 1100316 - ASSY, WATER BLOCK WITH SHUTOFF



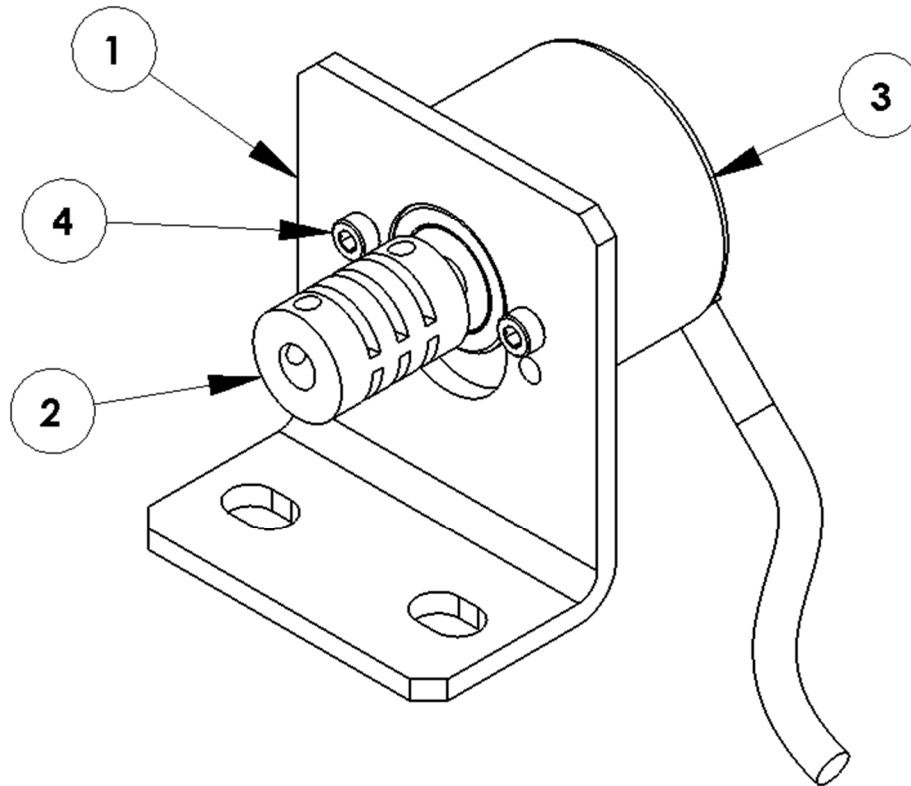
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6001011	MANIFOLD	1
2	1104698	VALVE, .25 NPT MALE TO FEMALE, MINIATURE, BRASS	1
3	8001085	FITTING, BARB	1
4	1100627	ASSY, COUPLANT PIPE, ADJUSTABLE	1

2.10 1100627 - ASSY, COUPLANT PIPE, ADJUSTABLE



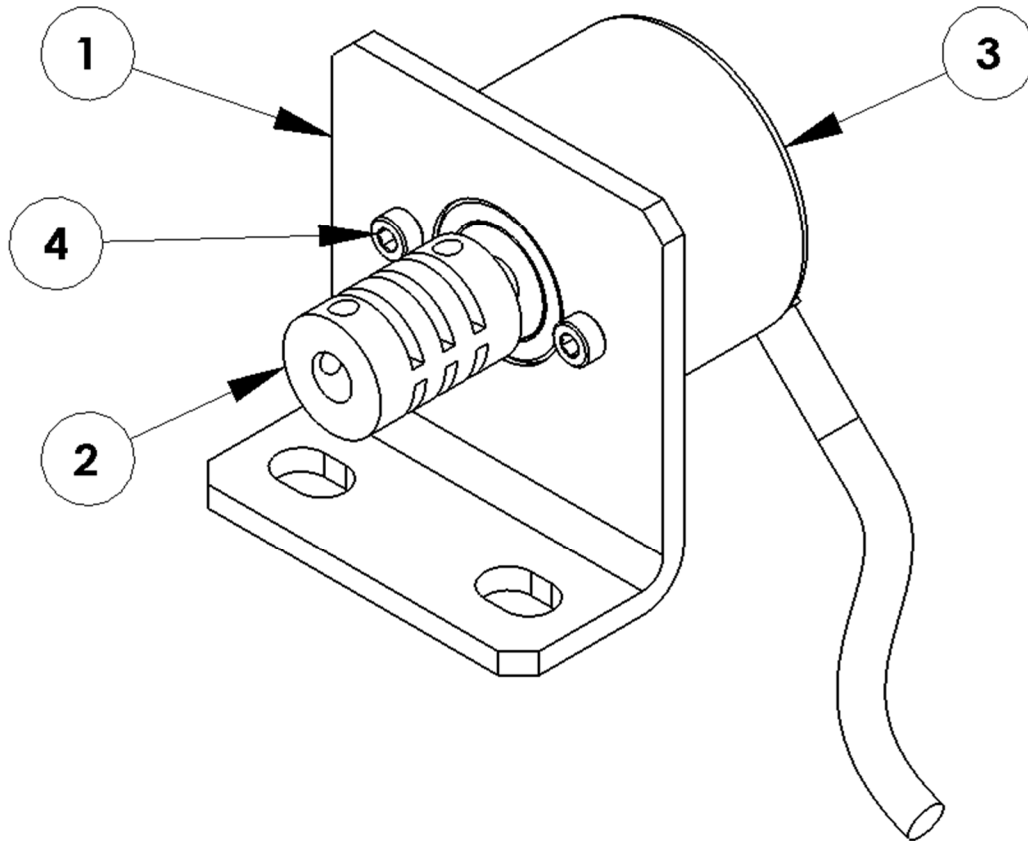
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1100624	COOLANT HOSE, 1' LENGTH	1
2	1100625	COOLANT SUPPLY CONNECTOR	1
3	1100626	1" FLAT NOZZLE	1

2.11 1100473 – ASSY, ENCODER & LOWER BRACKET



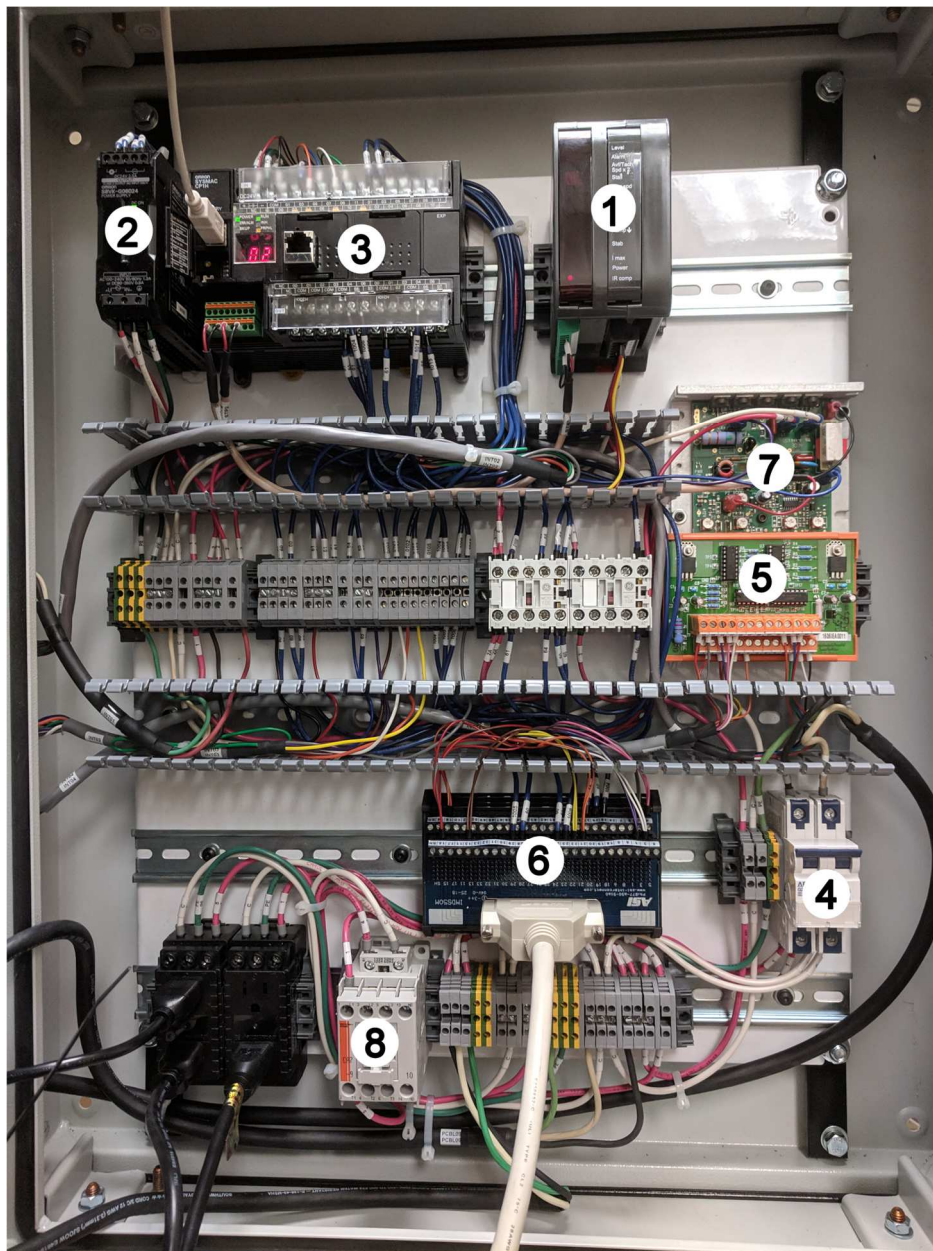
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6001019	BRACKET, ENCODER, LOWER	1
2	8001021	COUPLING	1
3	8001030	ENCODER	1
4	SHCS_SS-M3-0.5X10	M3 X 0.5 X 10mm. LG. SOC. HD. CAP SCR.	2

2.12 1100557 – ASSY, ENCODER & UPPER BRACKET



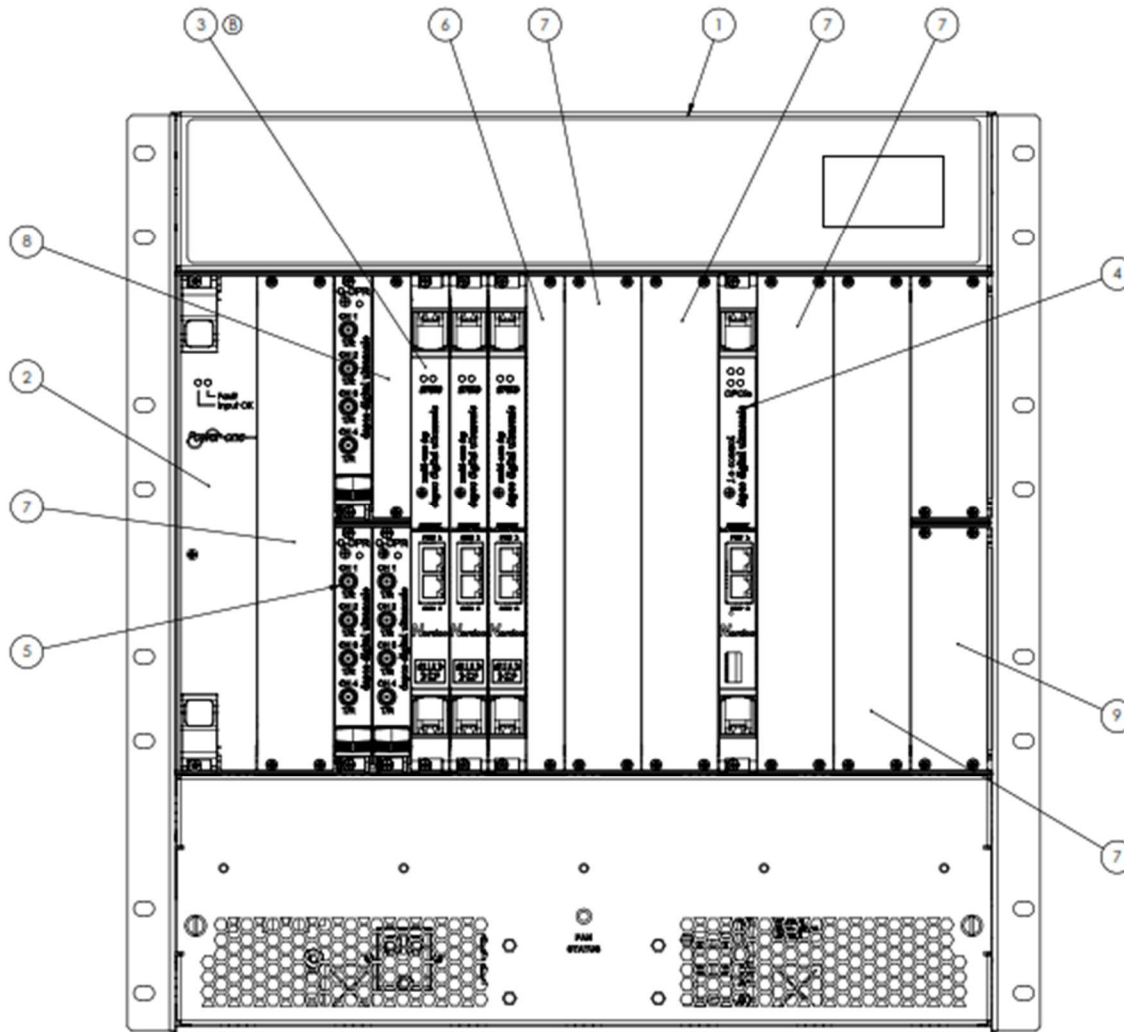
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6001018	BRACKET, ENCODER, UPPER	1
2	8001021	COUPLING	1
3	8001030	ENCODER	1
4	SHCS_SS-M3-0.5X10	M3 X 0.5 X 10mm. LG. SOC. HD. CAP SCR.	2

2.13 6000002 - ASSY, BACK PANEL, BT



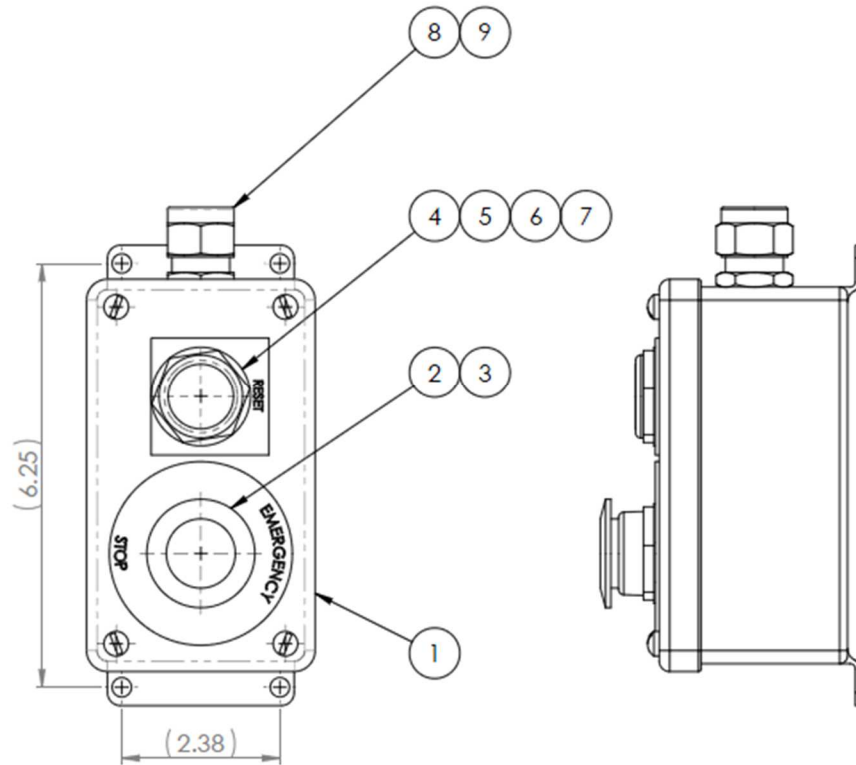
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	8001065	DRIVE, 1/8HP @ 115VAC, 1/4HP @ 230VAC	1
2	8001142	POWER SUPPLY	1
3	1000624	PLC, PROGRAMMED	1
4	3002005	CIRCUIT BREAKER, 20 AMP, 1POLE W/ NEUTRAL, G-CURVE	1
5	1000535	BOARD, TESTED, BENCI2, ENCODER INTERFACE, 300	1
6	1000945	CONN INTERFACE, 50 PIN, FIXED D-SUB MALE	1
7	8001136	DRIVE, VARIABLE SPEED DC MOTOR	1
8	1104800	CONTACTOR, 120VAC, 3 POLE, NON-REVERSING, 9A, 1NO	1

2.14 1104210 - ASSY, DSP32 SYSTEM, 12 CHNL



ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1101340	CHASSIS, DSP, 32 CHNL, 11U	1
2	1000347	POWER SUPPLY, 6U	1
3	1103798	BOARD, DSP W PWR SUPPLY	3
4	1103493	BOARD, I/O W PWR SUPPLY	1
5	1103491	BOARD, PULSER	3
6	1104133	SLOT COVER, 6U BLANK, SINGLE	1
7	1104134	SLOT COVER, 6U BLANK, DOUBLE	5
8	1104135	SLOT COVER, 3U BLANK, SINGLE	1
9	1104136	SLOT COVER, 3U BLANK, DOUBLE	2

2.15 1000257 - ASSY, E-STOP BOX

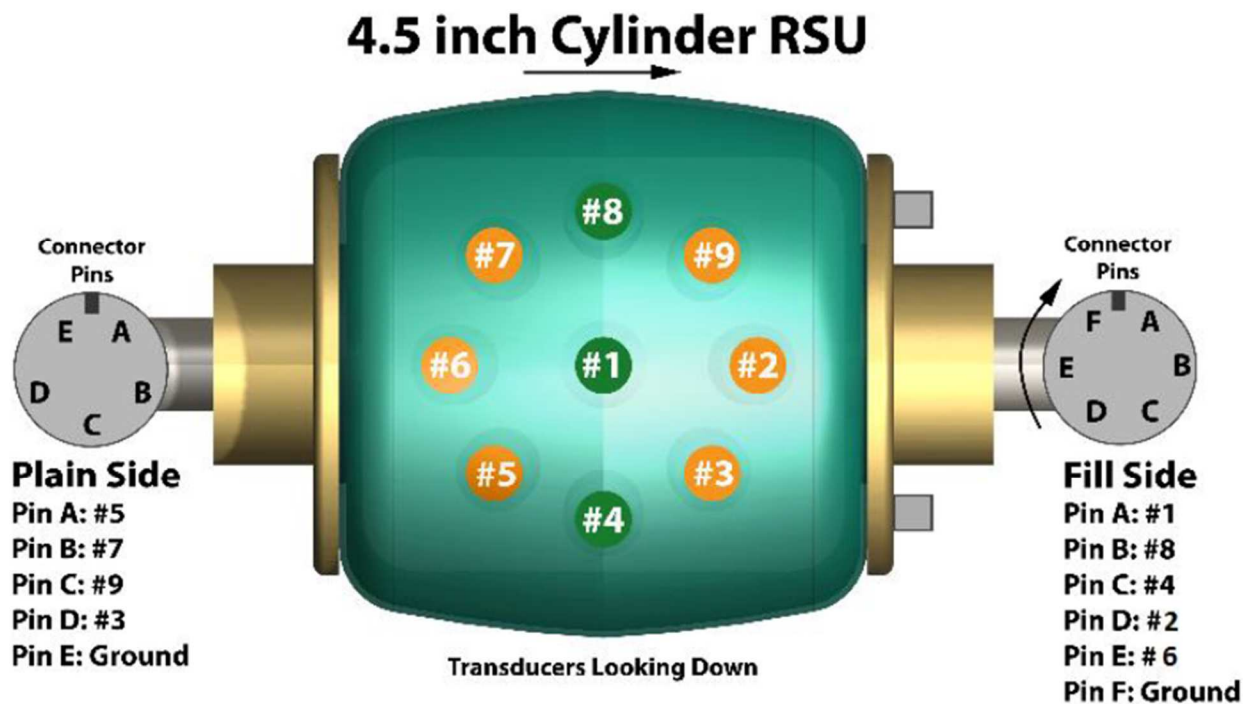


ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1104556	E-STOP BOX MICRO	1
2	8001103	BUTTON, E-STOP	1
3	8001104	LABEL, BUTTON	1
4	8001102	PUSH BUTTON, GREEN	1
5	8001109	CONTACT BLOCK	1
6	1104359	LIGHT UNIT	1
7	1104328	PLATE, LEGEND	1
8	1104557	CORD GRIP	1
9	1103912	LOCKNUT AND ORING	1

2.16 1000259 - ASSY, RSU 4.5IN, CYL MICRO, 9CH

The Micro 9 channel wheel is equipped with the following transducers:

#1	Thickness	5 MHz-S
#8,#4	Longitudinal	5 MHz-L
#2,#6	Transversal	3.5 MHz
#5,#7,#9,#3	Oblique	3.5 MHz



ITEM NO.	PART NO.	DESCRIPTION	QTY
1	4003001	MEMBRANE, MICRO WHEEL, TH-309	1
2	1000961	FLUID, WHEEL, CLEAR, 1 GL	1
3	8001570	O-RING, # 338 BUNA N, SMALL	2
4	1103640	SCREW, 100 PACK, CSCS 6-32 X 0.5IN, BRASS	1



2.17 CSPEC-0012 - SYSTEM CTRL COMPUTER, 1U, 16-500, RAID, WIN10 EMB



2.18 1104741 - ASSY, ETHERNET SWITCH WITH POWER 110VAC SWITCH





3 Reference Documents

3.1 Mechanical Drawings

- 1102504_F ASSY, CYLSONIC MICRO FRAME

3.2 Electrical Drawings

- E-DWG-0018_C ELEC SCHEMATICS, CYLSONIC MICRO
- E-DWG-0019_I SYSTEM DIAGRAM, CYLSONIC MICRO