

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 Beacon Falls, 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)

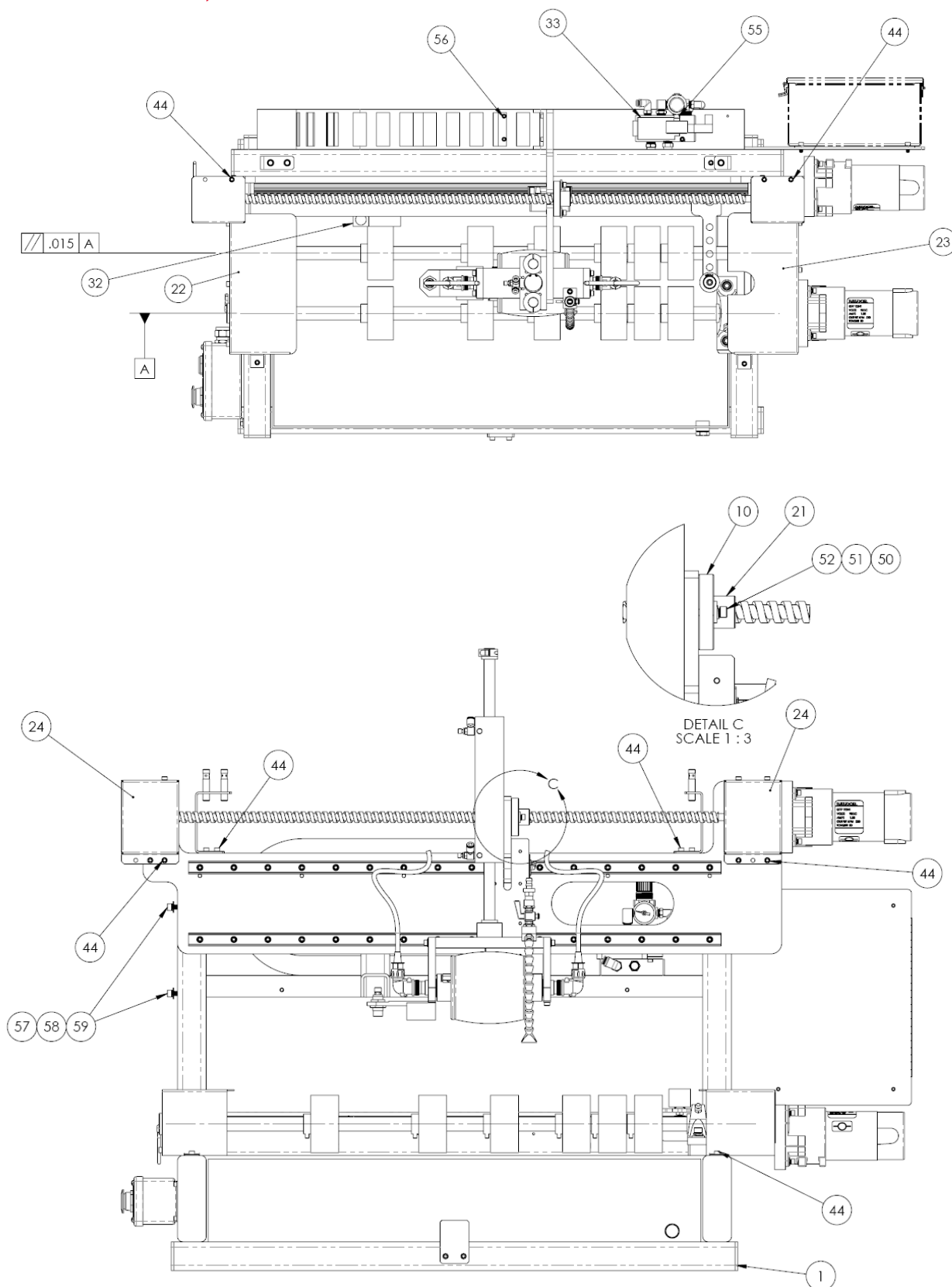
The Nordco DSP500 system, including the transducer wheel assembly mounting mechanics, was designed and manufactured by Nordco Rail Services and Inspection Technologies (125 Railroad Ave., Beacon Falls, CT 06403), a business unit of Nordco, Inc.

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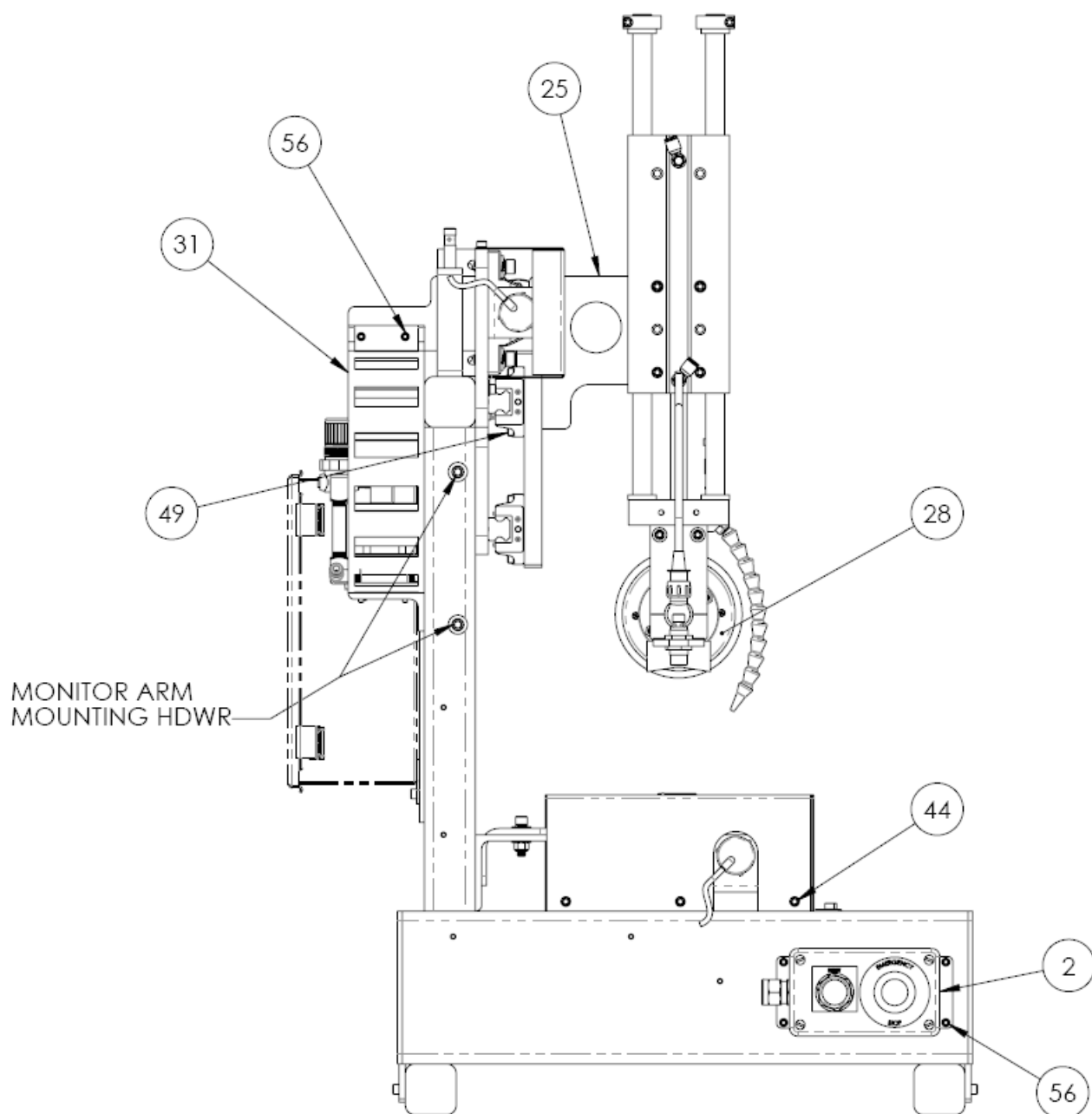
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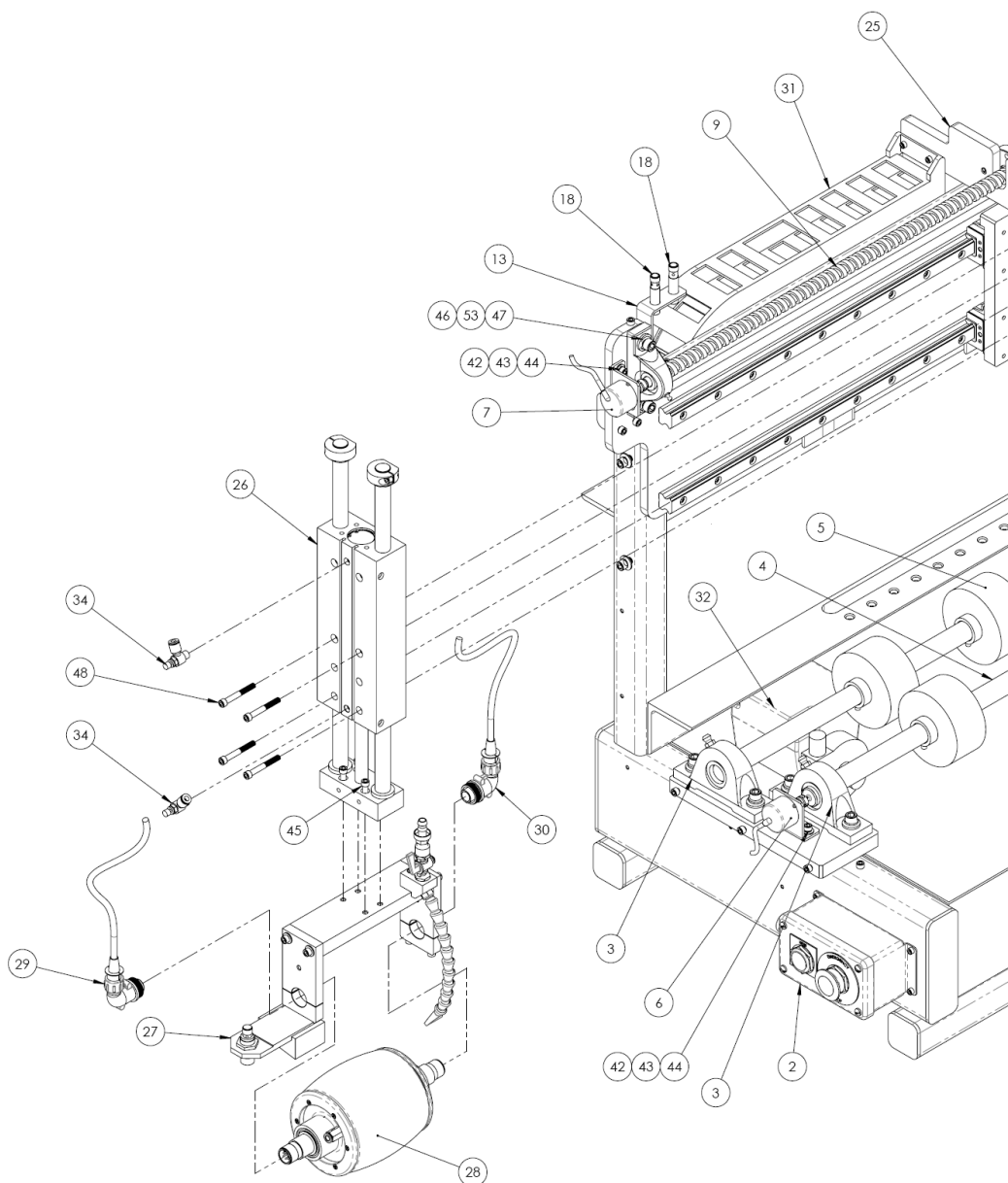
2 Customer Service & Spare Parts

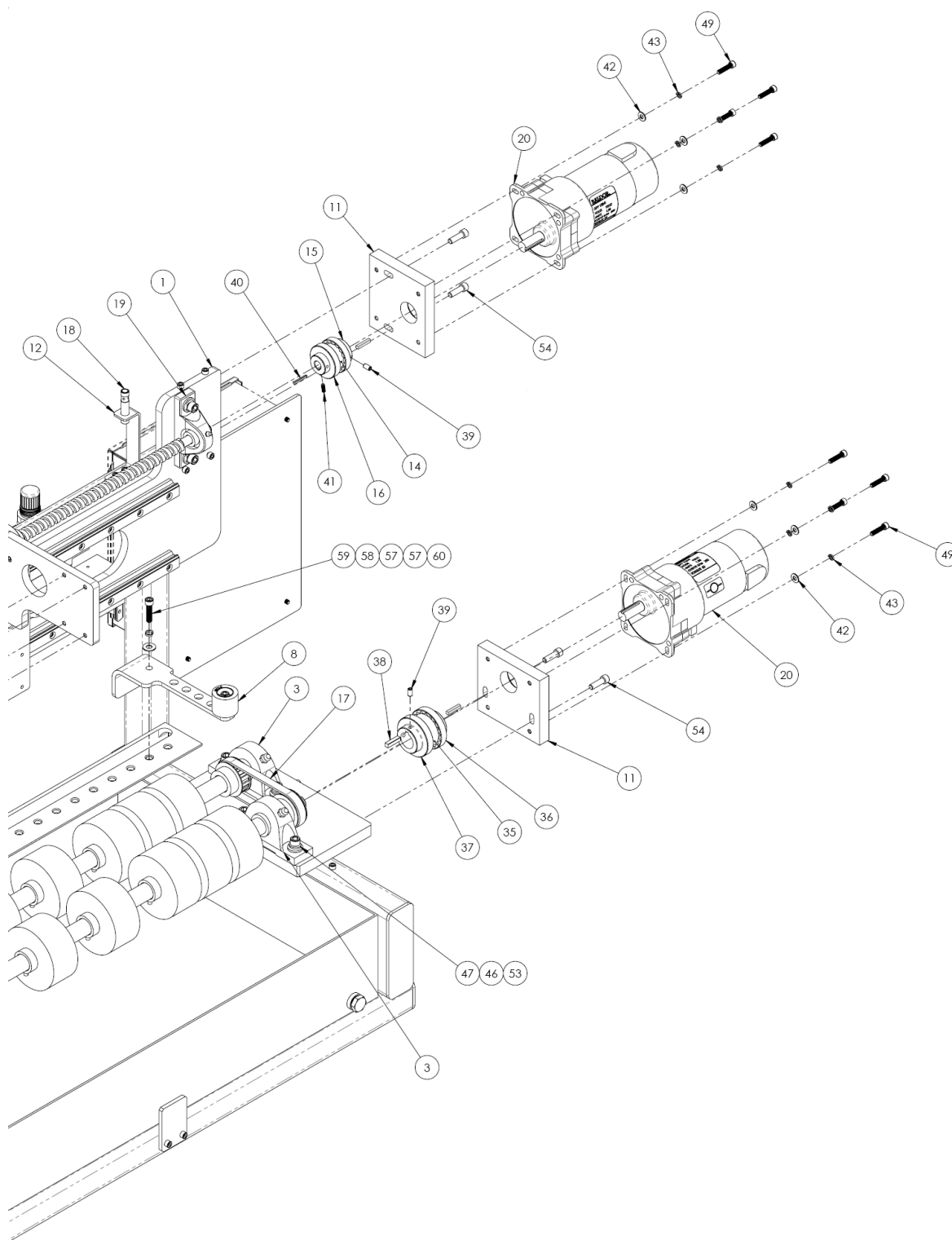
2.1 1102504 – ASSY, BENCHTOP FRAME



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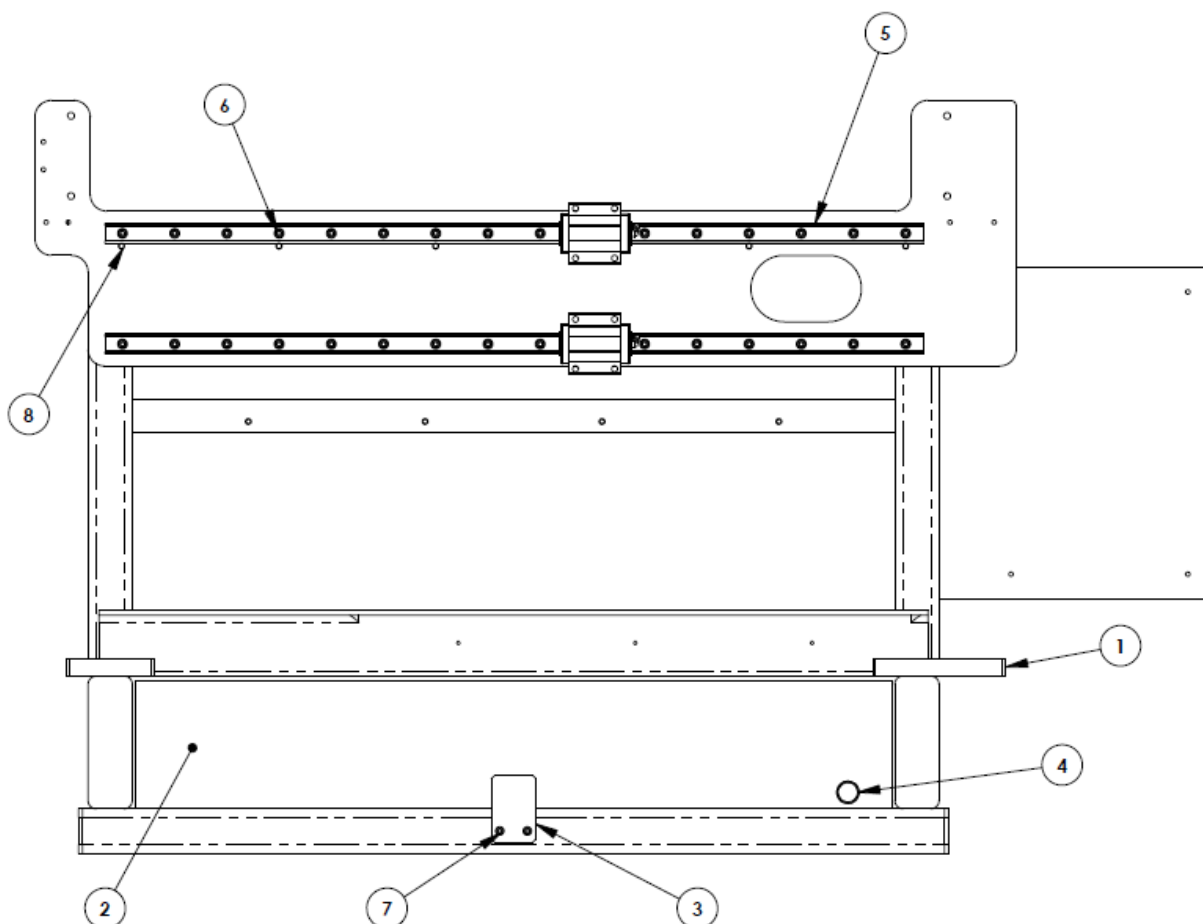


ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1104506	ASSY, FRAME	1
2	1000257	ASSY, E-STOP BOX	1
3	2001079	PILLOW BLOCK BRNG	4
4	1100471	ASSY, SHAFT, SHORT	1
5	1100472	ASSY, SHAFT, LONG	1
6	1100473	ASSY, ENCODER & BRKT, LOWER	1
7	1100557	ASSY, ENCODER & BRKT, UPPER	1
8	1100559	ASSY, ADJUSTABLE STOP	1
9	6001003	SHAFT, SCREW	1
10	6001005	MOUNTING FLANGE	1
11	6001016	PLATE, MOTOR MOUNT, UNIVERSAL	2
12	6001020	BRACKET, PROXIMITY SENSOR, SINGLE	1
13	6001021	BRACKET, PROXIMITY SENSOR, DOUBLE	1
14	8001001	COUPLER, SLEEVE, 1-7/8" DIAMETER	1
15	8001002	COUPLER, FLANGE, 2" DIAMETER	1
16	8001003	COUPLER, FLANGE, 2" DIAMETER	1
17	8001007	BELT, TIMING, 1/2" WIDE	1
18	8001018	SWITCH, PROX	3
19	8001031	BALL BEARING PILLOW BLOCK	2
20	8001033	MOTOR	2
21	8001162	THREADED NUT, ACME	1
22	1101562	BEARING COVER, ROLLER IDLER	1
23	1101561	BEARING COVER, ROLLER DRIVE	1
24	1101564	BEARING COVER, SCREW	2
25	1104507	WELDMENT, UE HEAD MOUNTING	1
26	1000964	SLIDE, 8IN STROKE	1
27	1104475	ASSY, RSU WHEEL BRACKET, TLV	1
28	1000259	ASSY, RSU 4.5IN, CYL MICRO, 9CH	1
29	1102873	ASSY, CBL, WHEEL, 5 PIN 90 DEG TO 4 LEMO, 20FT	1
30	1102874	ASSY, CBL, WHEEL, 6 PIN 90 DEG TO 5 LEMO, 20FT	1
31	8001010	3 FT. LG. FEED-THROUGH HOSE CARRIER	1
32	7000373	PUMP, WATER	1
33	1100637	ASSY, PNEUMATICS CONTROLS	1
34	8001304	NEEDLE VALVE	2
35	8001004	COUPLER, SLEEVE, 2-5/16" DIAMETER	1
36	8001005	COUPLER, FLANGE, 2-1/2" DIAMETER	1
37	8001006	COUPLER, FLANGE, 2-1/2" DIAMETER	1
38	1102802	.250 X .250 X 1.00 LG. KEY, STNLSS. STL.	1
39	8000299	.125 x.125 x1.00 LG. KEY, STNLSS. STL.	1
40	1104560	SCREW, SET, SOCKET, CUP POINT, 10-24 X 0.500, SS	1
41	FW_SS-0.25	WASHER FLAT 1/4" SS	12
42	LWH_SS-0.25	WASHER LOCK HIGH COLLAR 1/4" SS	12
43	SHCS_SS-0.25-20x0.500	SCREW, SHCS 1/4-20 x 0.50 LG 18-8 SS	26
44	SHCS_SS-0.25-20x1.500	1/4-20 X 1.50 LG. SOC. HD. CAP SCR.	4
45	1000894	3/8 I.D. X 1.0 O.D. X .12 THK. WASHER, STNLSS. STL.	12
46	LW_SS-0.38	3/8 LOCKWASHER SS	12
47	SHCS_SS-0.25-20x2.000	SCREW, SHCS 1/4-20 x 2.00 LG 18-8 SS	4

48	SHCS_SS-0.25-20x1.000	SCREW, SHCS 1/4-20 x 1.00 LG 18-8 SS	16
49	1103039	5/16 I.D.X .75 O.D. X .12 THK., WASHER, STNLSS. STL.	2
50	LWH_SS-0.31	5/16 HI-COLLAR LOCKWASHER, SS	2
51	SHCS_SS-0.25-20x1.250	SOCKET HEAD CAP SCREW	2
52	SHCS_SS-0.38-16x1.250	SCREW, SHCS 3/8-16 x 1.25 LG 18-8 SS	12
53	SHCS_SS-0.31-18x1.000	SHCS 5/16-18 x 1.00 LG 18-8 SS	4
54	SHCS_SS-10-24x1.250	SHCS #10-24 x 1.25 LG 18-8 SS	2
55	SHCS_SS-10-24x0.500	SCREW, SHCS, 10-24 X .5 LG, SS	8
56	FW_SS-0.31	FLAT WASHER, 5/16 BOLT SIZE, SS	4
57	LWH_SS-0.31	WASHER, HIGH COLLAR SPLIT LOCK, 5/16, SS	3
58	SHCS_SS-0.31-18x1.250	SCREW, SOCKET HEAD CAP, 5/16-18 x 1.25IN LG, SS	3
59	1102562	HEX NUT, NYLOCK, 5/16-18, 18-8 SS	1
60	*8001206	ARM, MONITOR, BLACK	1
61	*1103686	MONITOR	1
62	*1104487	TIE, CABLE, BLK	20

* = Not shown in figures.

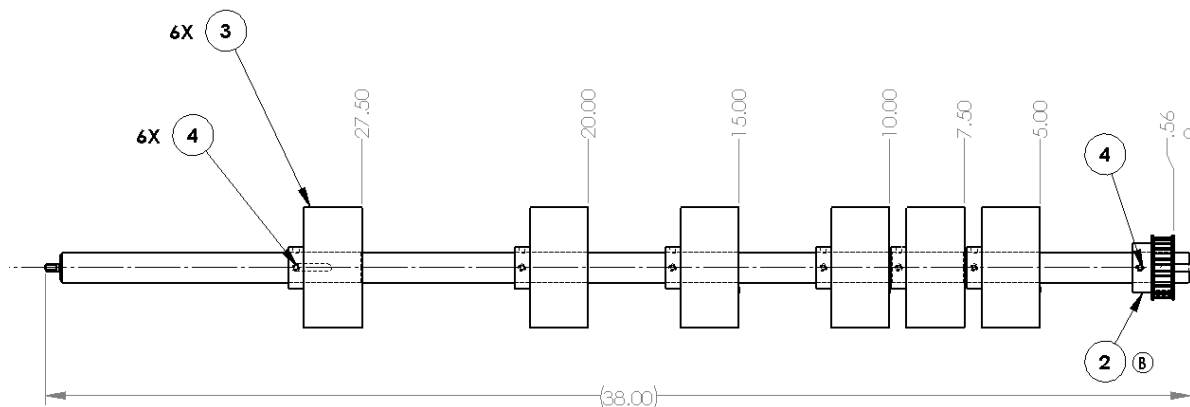
2.2 1104506 – ASSY, FRAME, BT



ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1104505	WELDMENT, MICRO FRAME	1
2	7000290	PAN, WATER COLLECTION	2

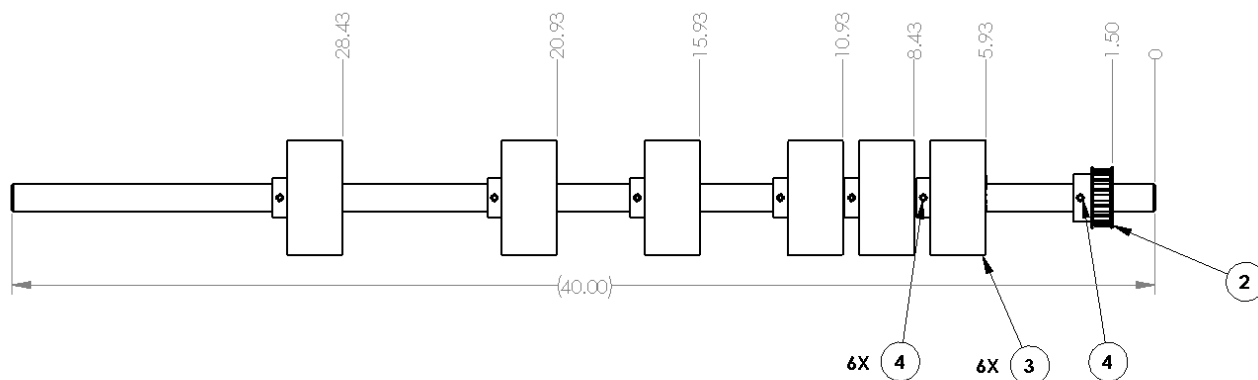
3	6001023	CLIP, WATER PAN	2
4	8001095	HEX HEAD BRASS PLUG	1
5	8001029	RAIL AND BRNG	2
6	SHCS_SS-0.25-20x1.000	SCREW, SHCS 1/4-20 x 1.00 LG 18-8 SS	32
7	SHCS_SS-0.25-20x0.625	SHCS 1/4-20 x 0.625 LG 18-8 SS	4
8	PIN_SS-0.25X0.75	PIN, DOWEL 1/4 X 0.63 LG	6

2.3 1100471 – ASSY, SHORT SHAFT, 12 ROLLER



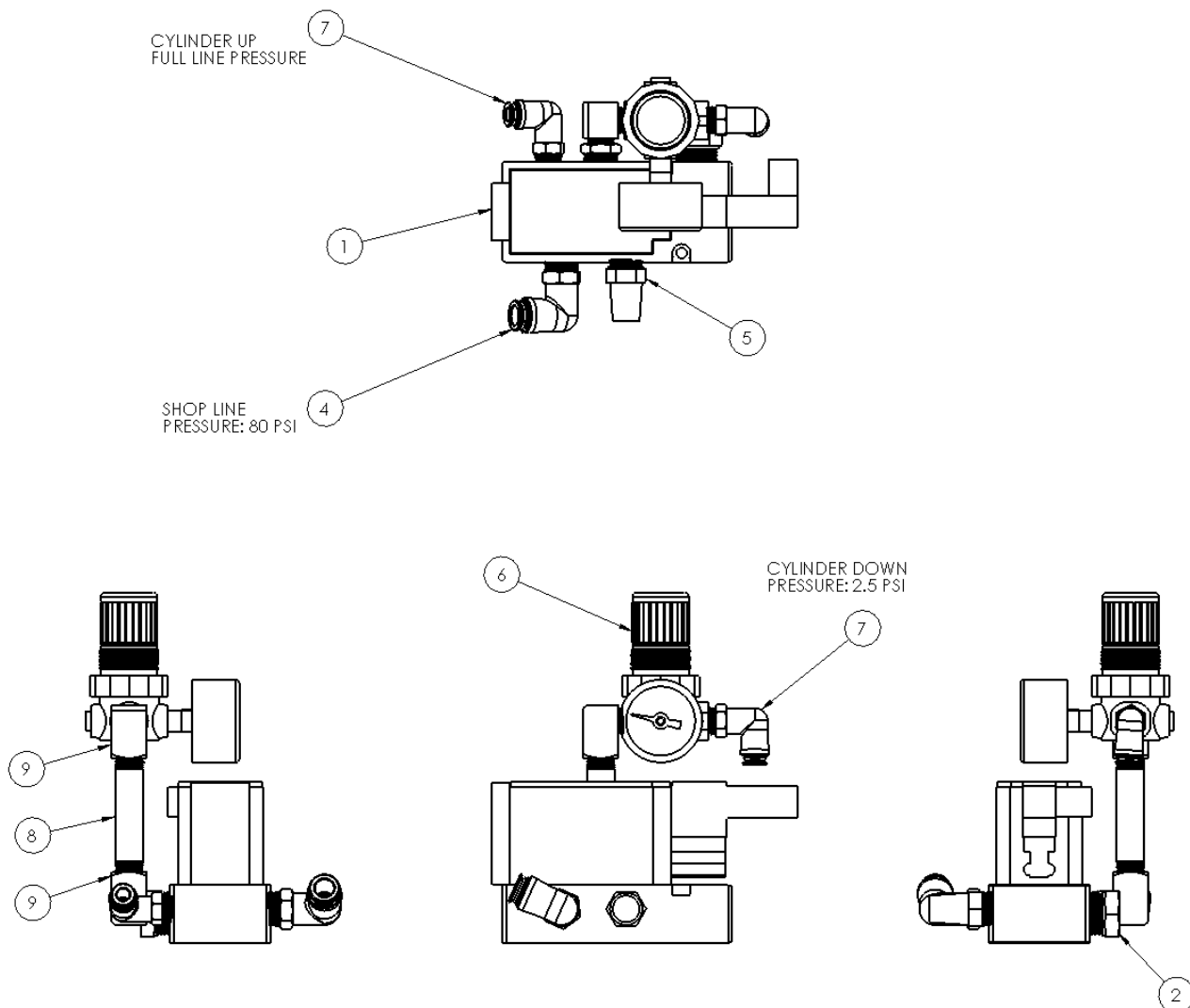
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	6001012	SHAFT, SHORT, FRONT	1
2	8001008	PULLEY, TIMING	1
3	8001009	ROLLER, 4" OD	6
4	SSS_SS-0.25-20X0.500	SCREW, SSS 1/4-20 x 0.5 LG 18-8 SS	7

2.4 1100472 – ASSY, LONG SHAFT, 12 ROLLER



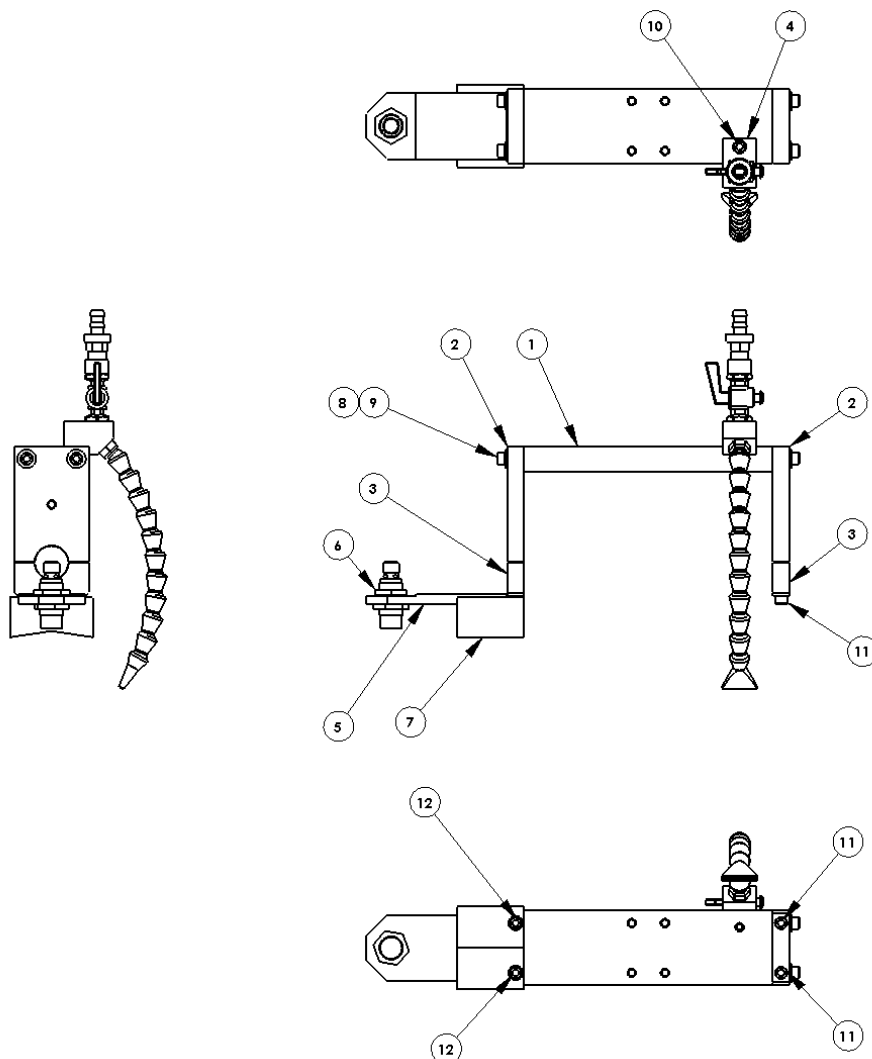
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6001013	SHAFT, LONG, REAR	1
2	8001008	PULLEY, TIMING	1
3	8001009	ROLLER, 4" OD	6
4	SSS_SS-0.25-20X0.500	SCREW, SSS 1/4-20 x 0.5 LG 18-8 SS	7

2.5 1100637 – ASSY, PNEUMATICS CONTROLS



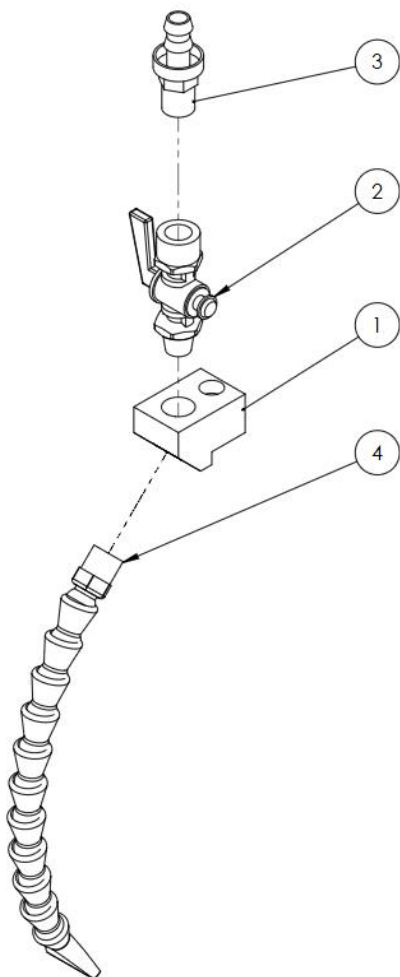
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	8001080	VALVE, PNEUMATIC	1
2	8001095	HEX HEAD BRASS PLUG	1
3	8001093	FITTING, REDUCER BUSHING	1
4	8001097	FITTING, 90 DEGREE SWIVEL	1
5	2003024	FITTING, MUFFLER	1
6	8001023	REGULATOR	1
7	8001085	FITTING, PUSH-ON HOSE	2
8	8001092	FITTING, NIPPLE	1
9	1104489	FITTING, ELBOW	2

2.6 1104475 – ASSY, RSU WHEEL BRACKET, TLV



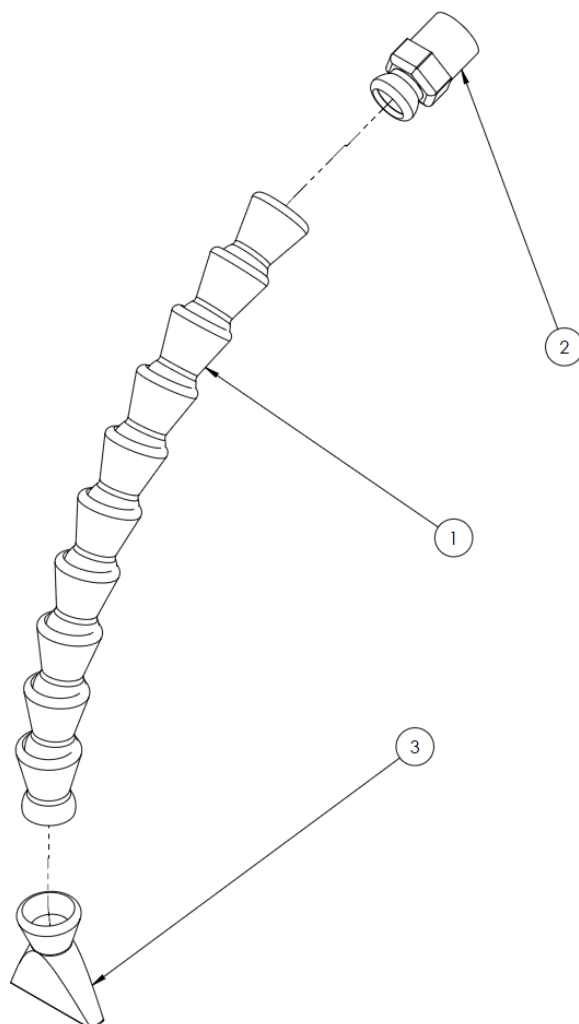
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6001008	PLATE, HEAD MOUNTING	1
2	6001009	PLATE, WHEEL SPACER	2
3	6001010	CAPS, WHEEL SPACER	2
4	1100316	ASSY, WATER BLOCK WITH SHUTOFF	1
5	1103149	SENSOR ARM, TLV	1
6	1102736	PROXIMITY SENSOR	1
7	1103668	GUIDE, WHEEL, TLV COMPATIBLE	1
8	FW_SS-0.25	.25 I.D. X .56 O.D.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

2.7 1100316 - ASSY, WATER BLOCK WITH SHUTOFF



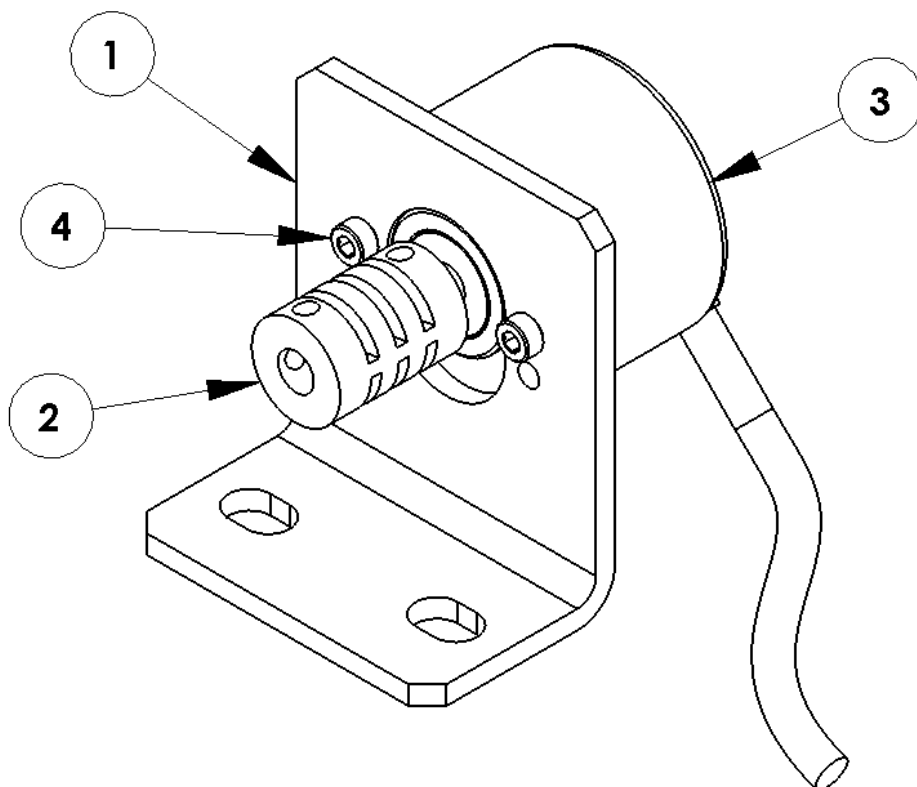
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6001011	MANIFOLD	1
2	2003030	VALVE	1
3	8001383	FITTING, BARB	1
4	1100627	ASSY, COUPLANT PIPE, ADJUSTABLE	1

2.8 1100627 - ASSY, COUPLANT PIPE, ADJUSTABLE



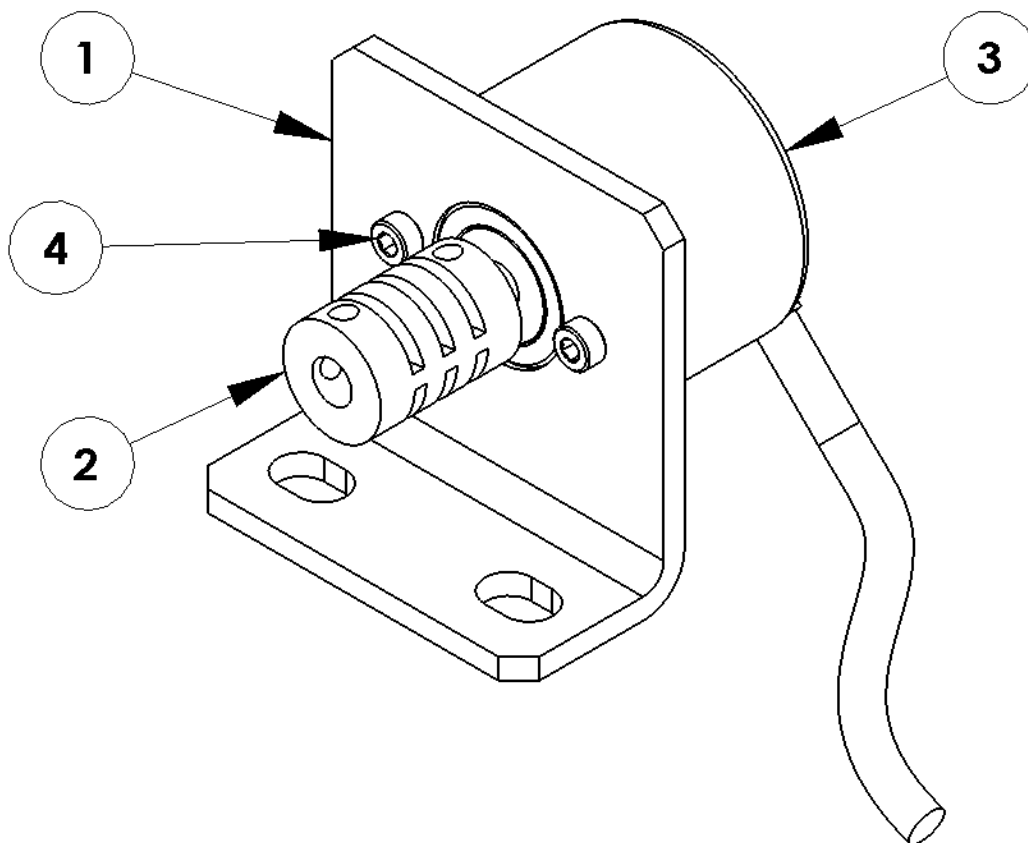
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1100624	COOLANT HOSE, 1' LENGTH	1
2	1100625	COOLANT SUPPLY CONNECTOR	1
3	1100626	1" FLAT NOZZLE	1

2.9 1100473 – ASSY, ENCODER & LOWER BRACKET



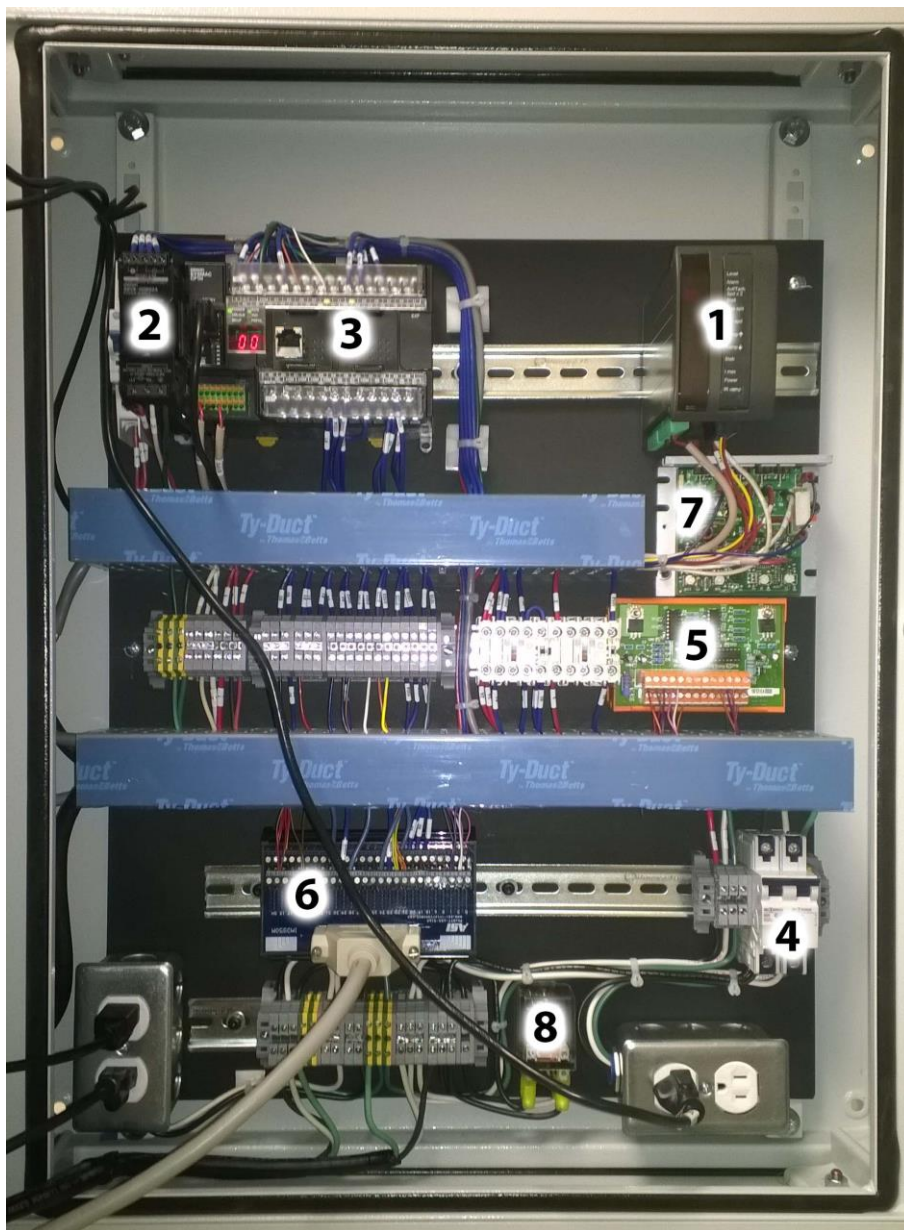
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1100985	BRACKET, ENCODER, LOWER	1
2	8001021	COUPLING	1
3	8001030	ENCODER	1
4	SHCS_SS-M3-0.5X10	M3 X 0.5 X 10mm. LG. SOC. HD. CAP SCR.	2

2.10 1100557 – ASSY, ENCODER & UPPER BRACKET



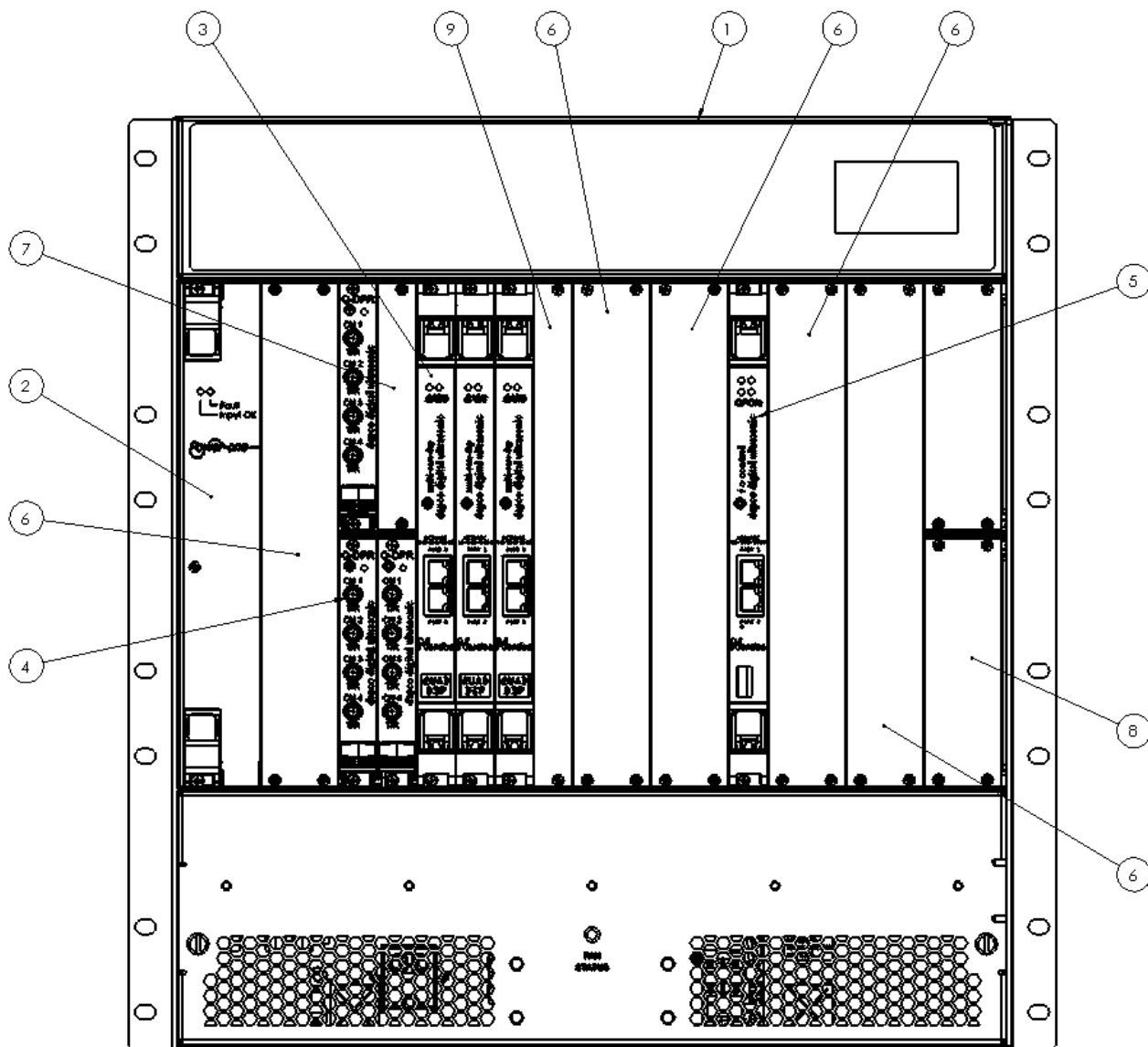
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6001018	BRACKET, ENCODER, UPPER	1
2	8001021	COUPLING	1
3	8001030	ENCODER	1
4	SHCS_SS-M3-0.5X10	M3 X 0.5 X 10mm. LG. SOC. HD. CAP SCR.	2

2.11 6000002 - ASSY, BACK PANEL, BT



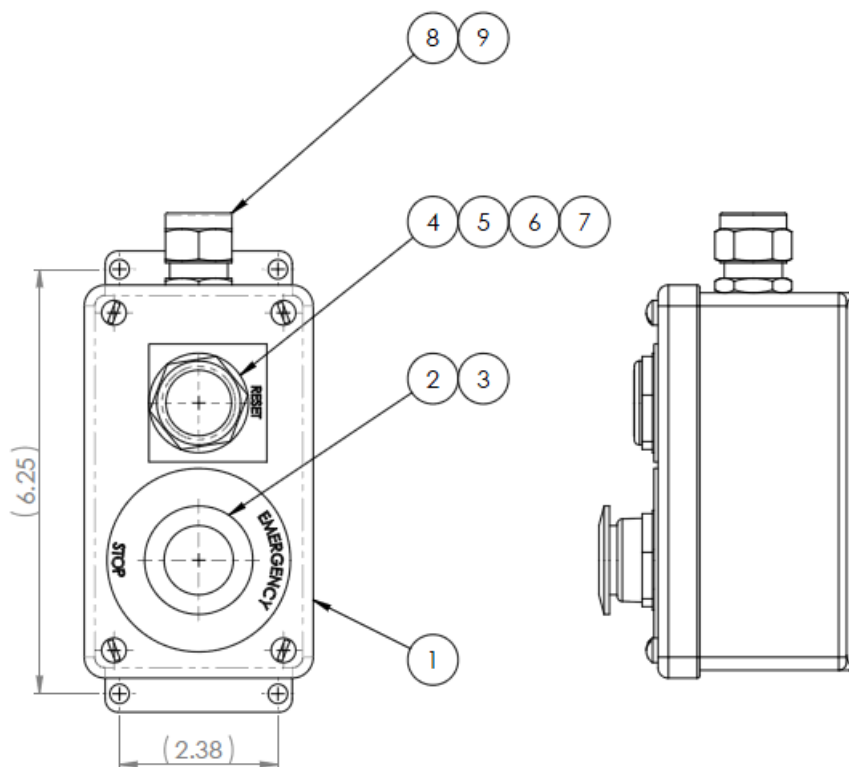
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	8001065	DRIVE, 1/8HP @ 115VAC, 1/4HP @ 230VAC	1
2	8001142	POWER SUPPLY	1
3	1000624	PLC, PROGRAMMED	1
4	3002005	CIRCUIT BREAKER, 20 AMP, 1POLE W/ NEUTRAL, G-CURVE	1
5	1000535	BOARD, TESTED, BENCI2, ENCODER INTERFACE, 300	1
6	1000945	CONN INTERFACE, 50 PIN, FIXED D-SUB MALE	1
7	8001136	DRIVE, VARIABLE SPEED DC MOTOR	1
8	8001143	RELAY, SINGLE POLE DBL THROW, SPDT	1

2.12 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	1103489	BOARD, DSP W PWR SUPPLY	3
4	1103491	BOARD, PULSER	3
5	1103493	BOARD, I/O W PWR SUPPLY	1
6	1104134	SLOT COVER, 6U BLANK, DOUBLE	5
7	1104135	SLOT COVER, 3U BLANK, SINGLE	1
8	1104136	SLOT COVER, 3U BLANK, DOUBLE	2
9	1104133	SLOT COVER, 6U BLANK, SINGLE	1

2.13 1000257 - ASSY, E-STOP BOX

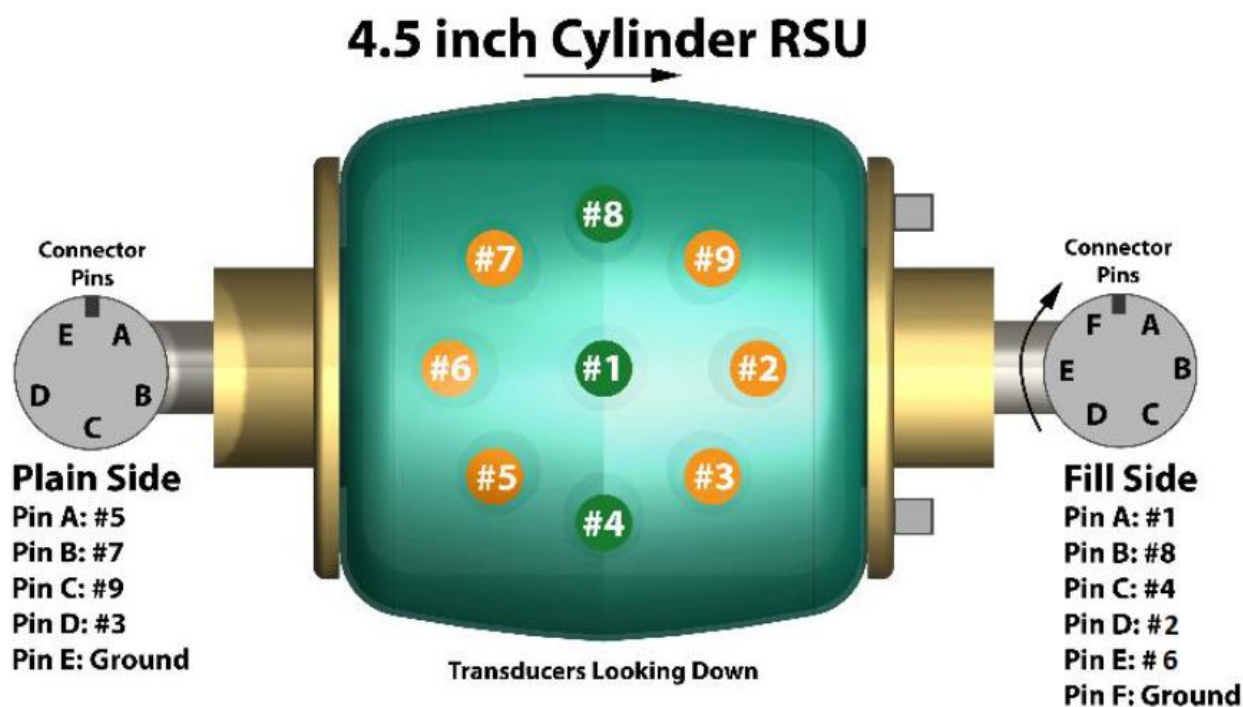


ITEM NO.	PART NO.	DESCRIPTION	QTY
1	1104556	E-STOP BOX MICRO	1
2	8001103	BUTTON, E-STOP	1
3	8001104	LABEL, BUTTON	1
4	8001102	PUSH BUTTON, GREEN	1
5	8001109	CONTACT BLOCK	1
6	1104359	LIGHT UNIT	1
7	1104328	PLATE, LEGEND	1
8	1104557	CORD GRIP	1
9	1103912	LOCKNUT AND ORING	1

2.14 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

2.15 2500027 - COMPUTER, 1U BT CYL SYSTEM

2.16 CSPEC-0010 - SYSTEM CTRL COMPUTER, 1U, 16-500, RAID, WIN7 EMB



2.17 1104362 - ASSY, ETHERNET SWITCH WITH POWER 110VAC SWITCH



3 Reference Documents

3.1 Mechanical Drawings

- 1102504_A ASSY, CYLSONIC MICRO FRAME

3.2 Electrical Drawings

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