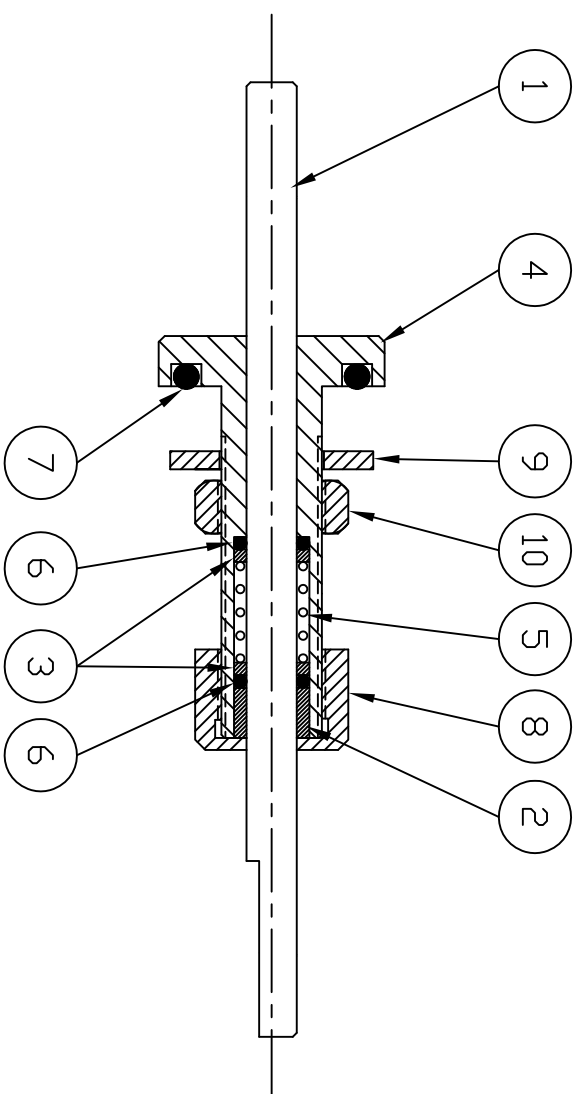
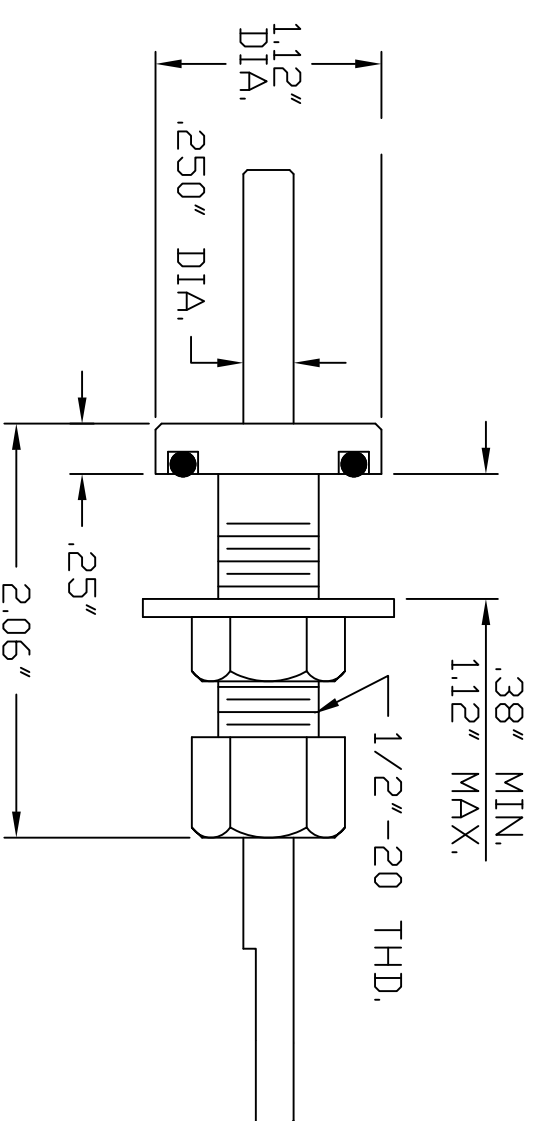


SYM	REVISION DESCRIPTION	DATE	APPROVED
A	ADDED TABLE	02/10/09	BES



ITEM	PART #	DESCRIPTION
-0	RDT001-0002	-
-1	RDT001-0003	-
-2	RDT001-0004	DELETE ITEM 1



HDW007-0010	1	HEX NUT .50-20 THD.	.50-20 THD.	10
HDW011-0012	1	WASHER-FLAT .50" NDM.	.50 NDM.	9
DW/G001-0027	1	NUT-CAP	A-0041-001-033	8
DRG004-0049	1	O-RING VITON	5015-210	7
DRG004-0003	2	O-RING VITON	5015-010	6
SPR001-0005	1	SPRING-COMPRESSION	5094-008	5
RDT001-0047	1	HOUSING-ROTARY MOTION	A-0041-001-102	4
RDT001-0046	2	SPACER-SMALL .06" WIDE	A-0041-001-034-2	3
RDT001-0045	1	SPACER-LARGE .25" WIDE	A-0041-001-034-1	2
SFT001-0022	1	ROTARY MOTION SHAFT	A-0041-001-103-01	1
CLC NO	QTY	DESCRIPTION	DWG/PART NO	ITEM

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DENTON VACUUM

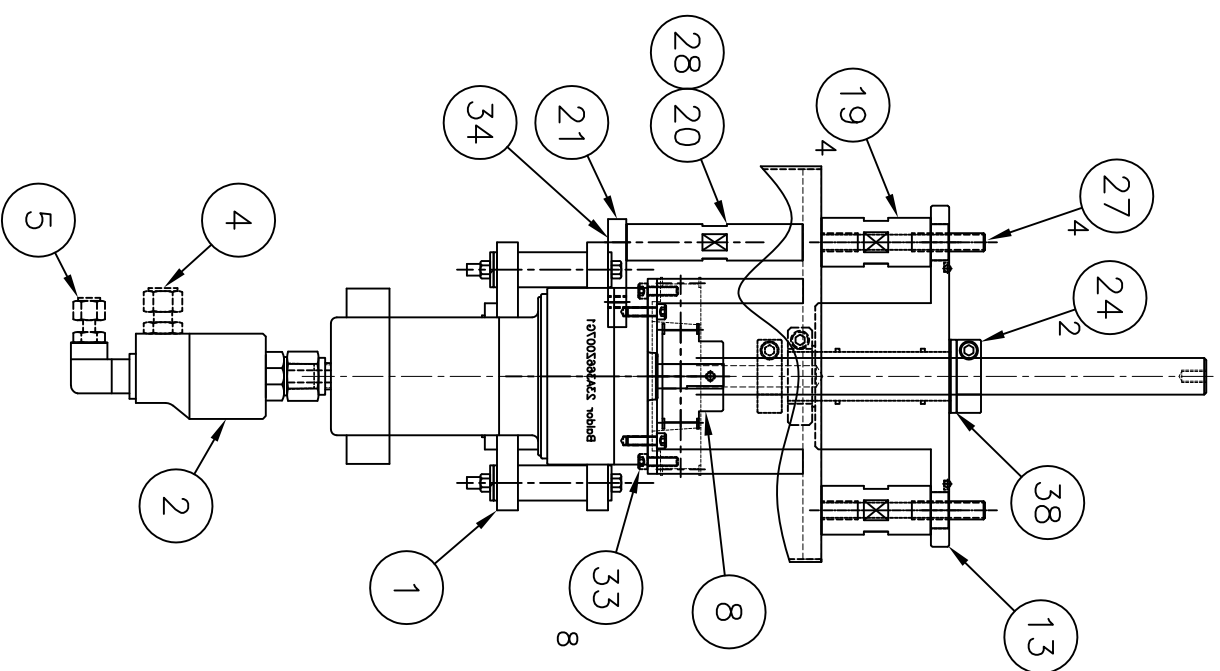
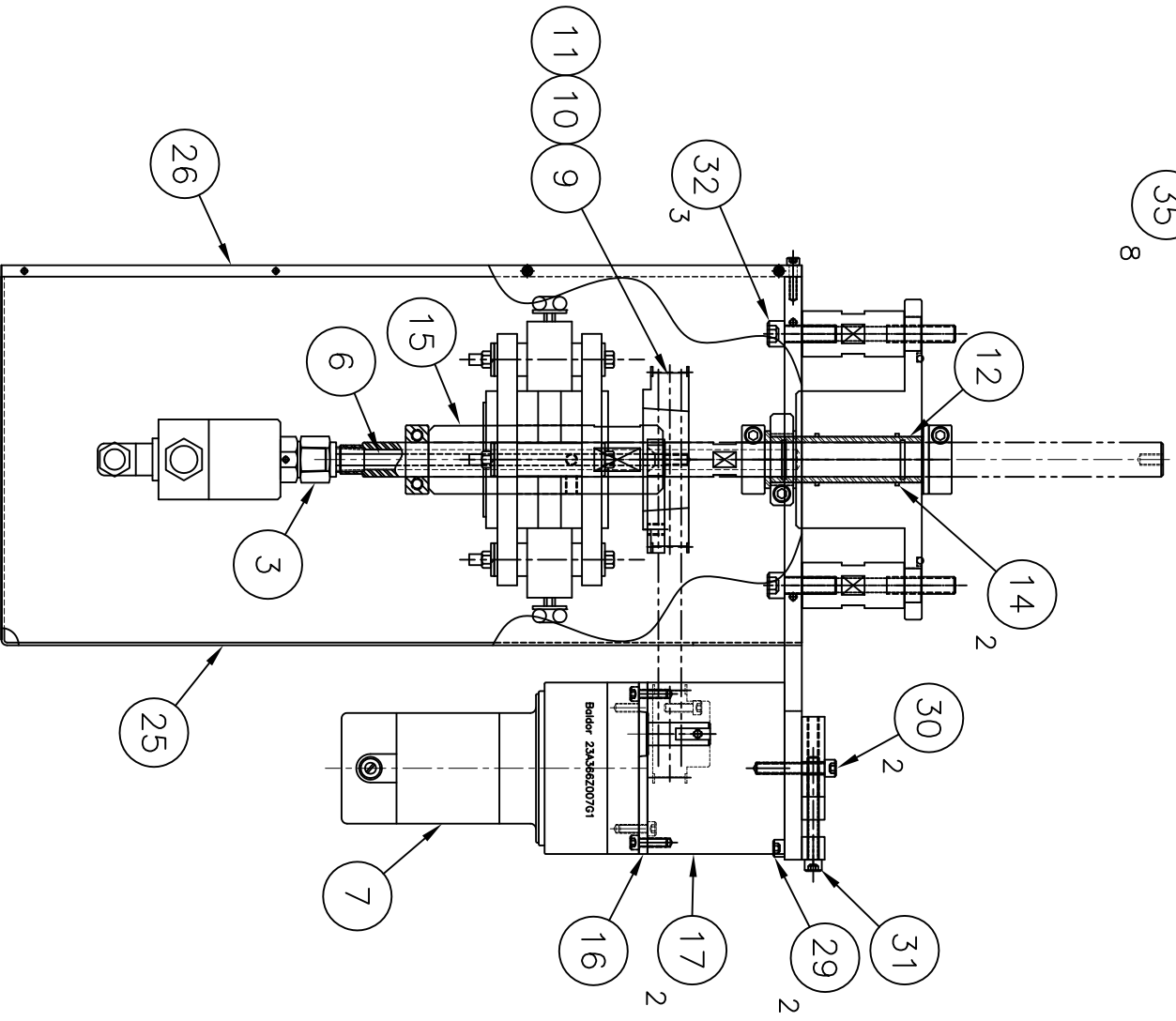
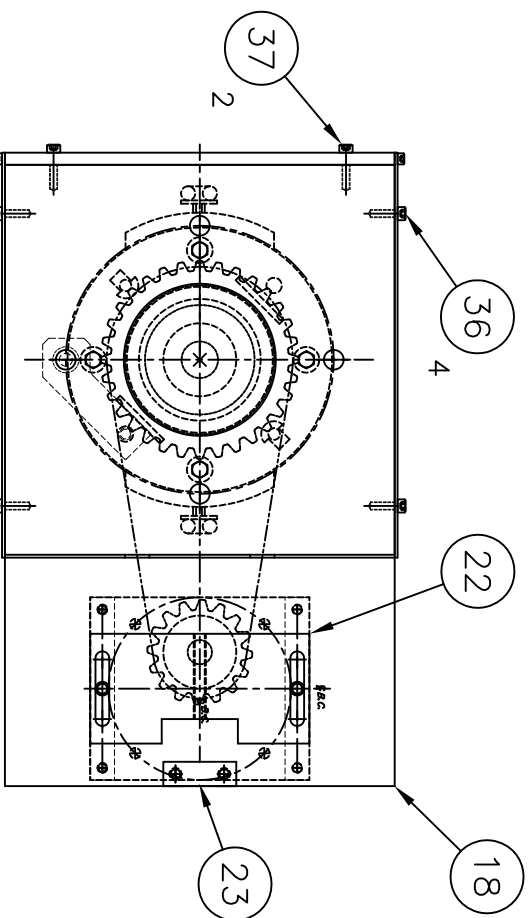
DRAWN	DATE
CHECKED	DATE
APPD.	DATE

.25" DIA. ROTARY MOTION ASSEMBLY (STANDARD)

FILE: 0041-001-008
PART#: SEE TABLE

B-0041-001-008	REV A	
PROJ	SCALE 1:1	SHEET

SYM	REVISION DESCRIPTION	DATE	APPROVED
D	ITEM 13 WAS FED001-0131	11/20/09	BES
E	CHANGED MATERIAL ITEM 12 FROM TEFLON TO ULTEM	3/18/15	STEVE G.



CLC P/N	QTY	DESCRIPTION	DWG/PART NO	ITEM
CON002-0062	2	CONNECTOR-FLANGED PANEL JACK TYPE HN	ALLIED- 82-92	40
SHD006-0086	2	SHIELD, SLIP RING ASSY BRUSHES	A-0044-017-215	39
HDW007-0161	1	WASHER, FLAT - TEFLON Ø1.50 OD X Ø.781 ID X .125 THK	A-0044-017-198	38
HDW002-0080	2	SHCS #8-32 X 3/4" LG.	CHS016C0075SS	37
HDW002-0078	4	SHCS #8-32 X 1/2" LG.	CHS016C0050SS	36
HDW002-0068	8	SHCS #6-32 X 1/2" LG.	CHS013C0050SS	35
HDW004-0003	4	FHCS 1/4-20 X 3/4" LG.	McMSTR 92210A540	34
HDW002-0115	8	SHCS #10-32 X 5/8" LG.	CHS019F0062SS	33
HDW002-0186	3	SHCS 3/8-16 X 1 1/8" LG.	McMSTR 92196A625	32
HDW002-0181	1	SHCS 1/4-20 X 2 1/4" LG.	McMSTR 92196A551	31
HDW002-0008	2	SHCS 1/4-20 X 1 1/2" LG.	CHS025C0150SS	30
HDW002-0185	2	SHCS 1/4-20 X 7/8" LG.	McMSTR 92196A541	29
HDW008-0082	1	SCREW, SET SOCKET HEAD 3/8-16 X 1-3/4" LG	McMSTR 92311A627	28
HDW008-0060	4	SCREW, SET SOCKET HEAD 3/8-16 X 1-1/2" LG	SCC037C0150SS	27
PLT003-0040	1	PLATE, ACCESS - COVER, SLIP RING ASSY	B-0044-017-218	26
CONV001-0144	1	COVER, SLIP RING ASSY	B-0044-017-227	25
COL001-00227	2	COLLAR, CLAMP-ON .75" I.D.	McMSTR 6157K16	24
BLK001-0080	1	BLOCK, BELT TENSION	A-0131-314-132	23
PLT004-0159	1	PLATE, BELT ADJUSTMENT	A-0100-122-118	22
BRK002-0409	1	BRACKET, SUPPORT - SLIP RING ASSY	A-0044-017-202	21
STD003-0163	1	STANDOFF, SLIP RING ASSY	A-0044-017-203	20
STD003-0155	4	STANDOFF, FERRO FEED THROUGH	A-0131-314-133	19
SUP001-0244	1	PLATE, SUPPORT - MOTOR & SLIP RING ASSY	B-0044-017-216	18
SUP001-0232	2	BLOCK, STANDOFF - DRIVE MOTOR SUPP	B-0100-122-117-01	17
SUP001-0230	1	PLATE, SUPPORT - DRIVE MOTOR	B-0100-122-119	16
BUS002-0187	1	ASSY, BUSHING - PRESS FIT	A-0044-017-201	15
ORG004-0009	2	O-RING, VITON .70 I.D. X .070 CS	PARKER 2-018	14
FED001-0041	1	FEEDTHROUGH FERROFLUIDIC 1.0"HOLLOW SHAFT, W/C	TELEMARK: IHFB1000WN	13
BUS002-0214	1	BUSHING, INSULATING (ULTEM)	A-0044-017-278	12
BLT001-0028	1	BELT, TIMING 21.0" LG. No. 210L050	DODGE 464545	11
PUL001-0072	1	BUSHING, TL 3/4" BORE 1610 SERIES	DODGE 117158	10
PUL001-0056	1	PULLEY, TL 3/2" BORE 1610 SERIES	DODGE 113472	9
PUL001-0059	1	PULLEY 16T 3/8" P X 1/2" BORE 1610-MPB SERIES	DODGE 113453	8
MTR002-0094	1	DRIVE MOTOR	BALDOR 23A36Z007G1	7
SST001-0011	1	TUBE .25 O.D. X .028 W 304SS	SST-2500 X .028W	6
FTG001-0038	1	CONNECTOR, MALE 1/4 NPT X 1/4 TUBE O.D.	SWAGelok B-400-1-4	5
FTG001-0206	1	CONNECTOR, MALE 3/8 NPT X 1/4 TUBE O.D.	SWAGelok B-400-1-6	4
FTG002-0002	1	ADAPTER-.38 FPT X .25 MPT, BRASS	PARKER: 222P-6-4	3
PMP009-0132	1	DUOFLO UNION, ROTATING WATER	57-000-001-030	2
SLR001-0004	1	SLIP RING ASSY	CONDUCTIX CA15097	1

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TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED

BASIC DIMENSION	2 PLACE DECIMALS	3 PLACE DECIMALS	DRAWN	DATE
UP TO 6	±.02	±.005	RAMATO	10/05/07
ABOVE 6 TO 24	±.03	±.010		
ABOVE 24	±.06	±.015	APPD.	DATE

ANGULAR DIMENSIONS ± 1/2°

ALL SURFACES TO BE UNLESS OTHERWISE SPECIFIED.

FILE: 0044-017-024
CLC P/N: BIA001-0017

DENTON VACUUM
LLC. MDDRESTDWN, NJ

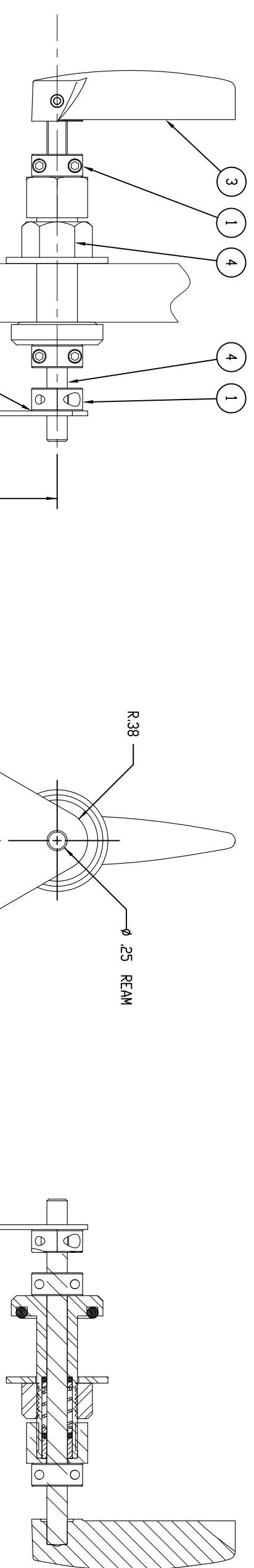
BIAS ROTATION ASS'Y.
FERRO FLUIDIC SEAL
STANDARD 1.00" SHAFT

B-0044-017-024

SCALE 1/4

SHEET 1 OF 1

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	REDRAWN	7/7/97	D. WELLI
B	ADDED PART #S TO BOM	02/10/09	BES
C	ITEM 3 WAS ROT001-0003, ADDED ITEM 5	11/13/09	BES
D	ITEM 4 WAS HAN001-0009, A-0100-035-354	11/15/10	STEVE G
E	ITEM 4 WAS HAN001-0050	06/07/11	STEVE G.



ITEM #2 MATERIAL: SS SHEET, 16 GA.

PART#	QTY	DESCRIPTION	DWG/PART#	ITEM
BRG019-0013	3	COLLAR-2 PIECE .25" BORE	KAMANI 15506	1
SRC005-0003	1	SHUTTER-304 S.S. 4.00" VIEWPORT	C-0058-138-022-2	2
HAN001-0052	1	HANDLE-LEVER BLACK PLASTIC FOR 290° SWAFT	6094K16	3
ROT001-0003	1	FEEDTHRU ASSY-ROTARY, .25"	B-0041-001-008-1	4

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DENTON VACUUM
LLC, MOORESTOWN, NJ

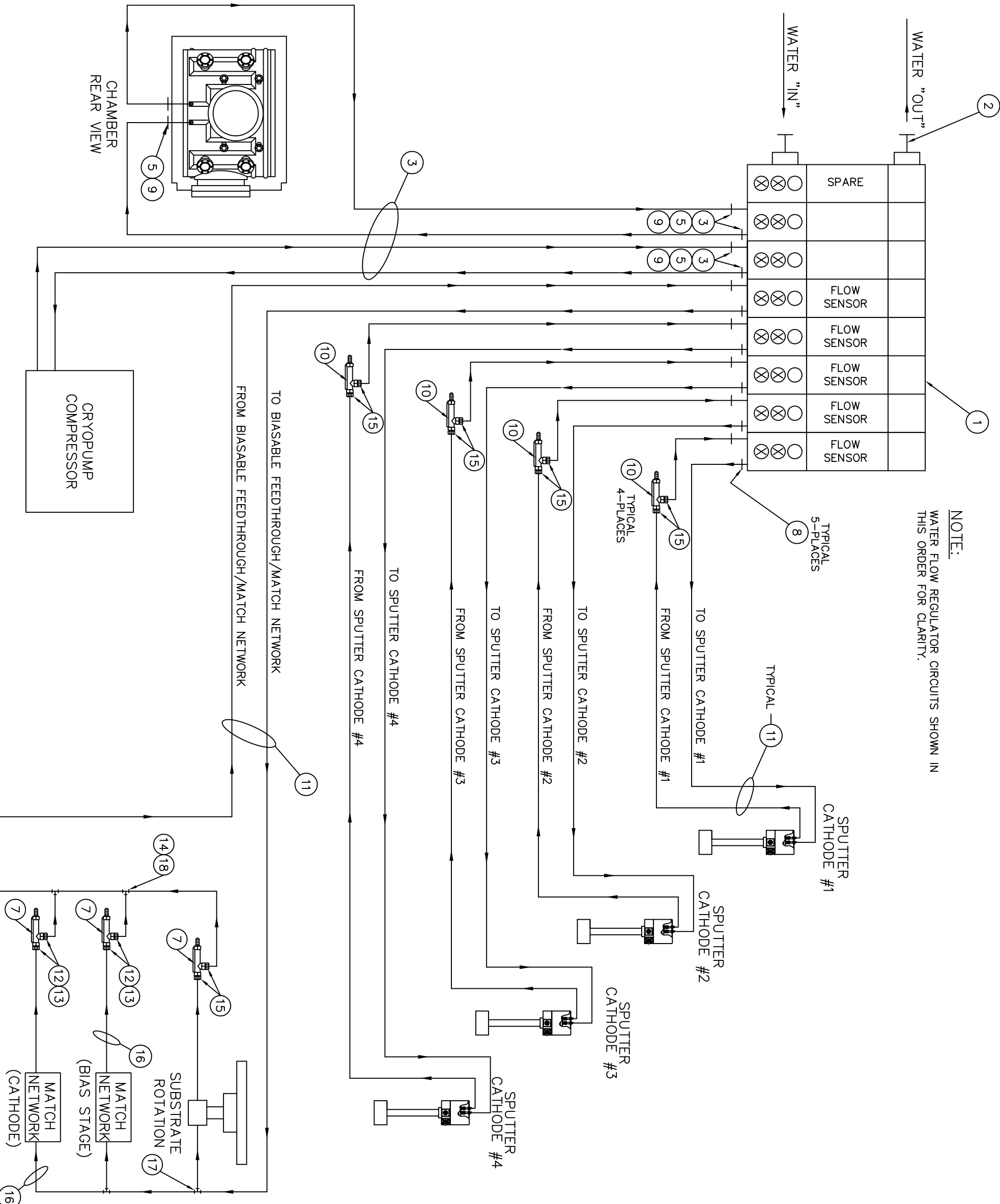
TOLERANCES UNLESS OTHERWISE SPECIFIED
DRAWN 10/14/83
DATE

SHUTTER ASSY-SWING
(FOR 4.0" VIEWPORT)

ALL SURFACES TO BE 6831/ UNLESS OTHERWISE SPECIFIED.
ANGULAR DIMENSIONS ± 1/2°
CHECKED DATE
APPRD. DATE
FILE: 0058-138-022
PART#: SRC005-0002
PROJ SCALE 1:1 SHEET 1 OF 1
REV E

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	10/22/14	STEVE G.

NOTE:
WATER FLOW REGULATOR CIRCUITS SHOWN IN THIS ORDER FOR CLARITY.



CHAMBER REAR VIEW

QTY	DESCRIPTION	DWG/PART NO	TRM
6	TEE UNION, RED'NG, 3/8x3/8 PUSH ON 1/4" NPT	5779K182	18
6	TEE UNION, RED'NG, 3/8 x 3/8 x 1/4" PUSH ON	5779K671	17
25'	TUBE-POLYETHYLENE 250" OD.	5384K53	16
12	FITTING-STRAIGHT 9/16-18 X 3/8" TUBE PUSH ON	A6519-AG	15
2	COUPLING-FEMALE STRAIGHT 1/4" FPI PLASTIC	4598K51	14
4	FITTING-STRAIGHT 9/16-18 X 1/4" FEMALE NPT	5-PP-1/4N	13
8	FITTING-PUSH ON 1/4" MPT X 1/4" TUBE	5105SK972	12
50'	TUBE-POLYETHYLENE .375" OD.	5384K55	11
4	FLOW-SWITCH 90 DEG 0.50 GPM W/NO. WINDOW	5-19-PP-0.50	10
12	CLAMP-HOSE # 6	200-09H	9
10	FITTING-TUBE PUSH ON 3/8" MPT X 3/8" TUBE	5105K18	8
3	FLOW-SWITCH 90 DEG 0.25 GPM W/NO. WINDOW	5-19-PP-0.25	7
4	FITTING-ELBOW HOSE BARB 3/8" NPT X 3/8" HOSE	289HB-6-6	6
6	FITTING-HOSE BARB 3/8" MPT X 3/8" HOSE	68HB-6-6	5
6	FITTING-PUSH ON 3/8" MPT X 1/4" TUBE	5105K211	4
30'	HOSE-RUBBER 3/8" ID.	7193-38-250	3
2	MALE NIPPLE - HOSE BARB	5346K69	2
1	MAINFOLD-8 STATION (2.6 GPM)	FSMLB00M	1

DENTON VACUUM

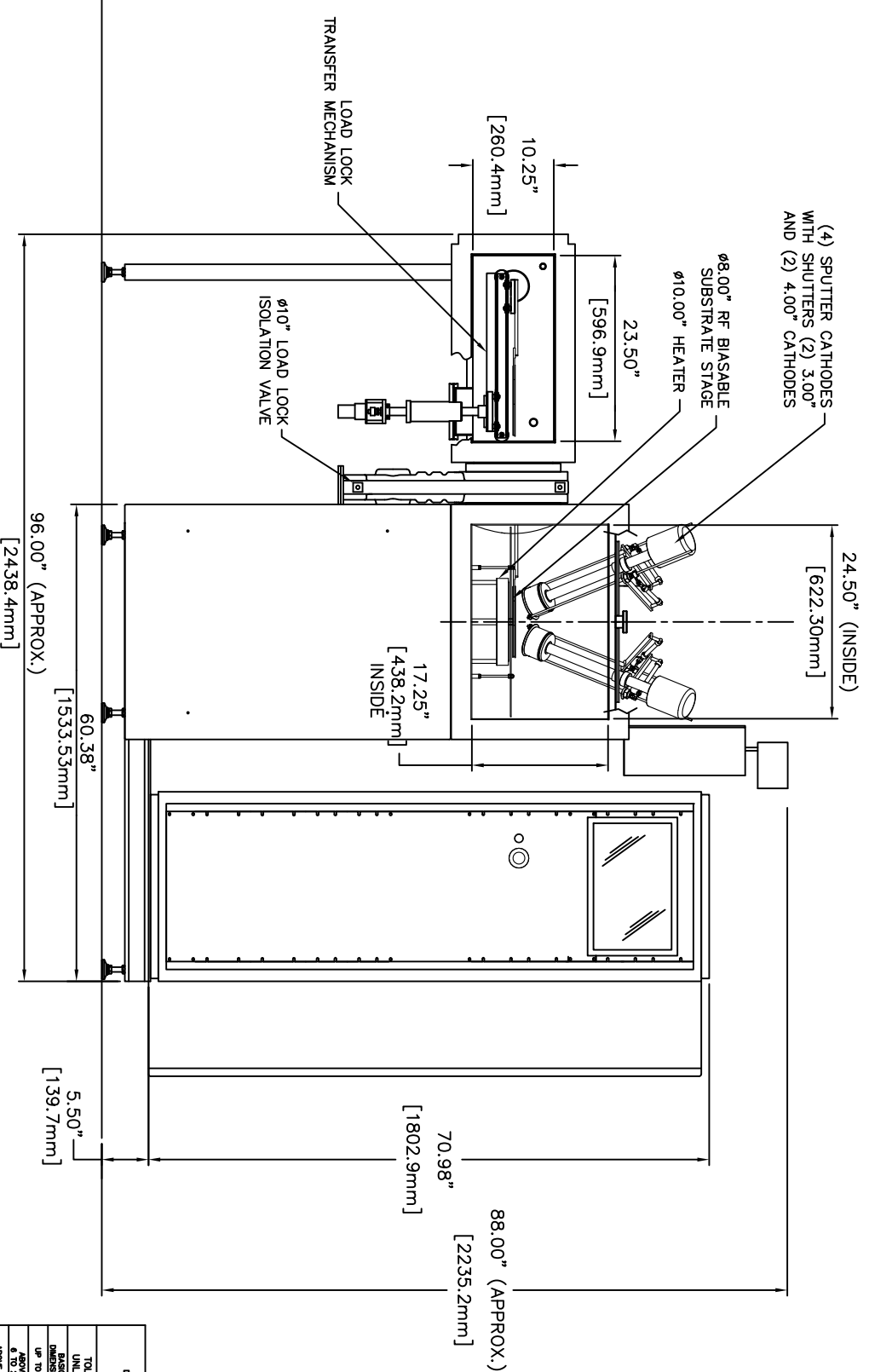
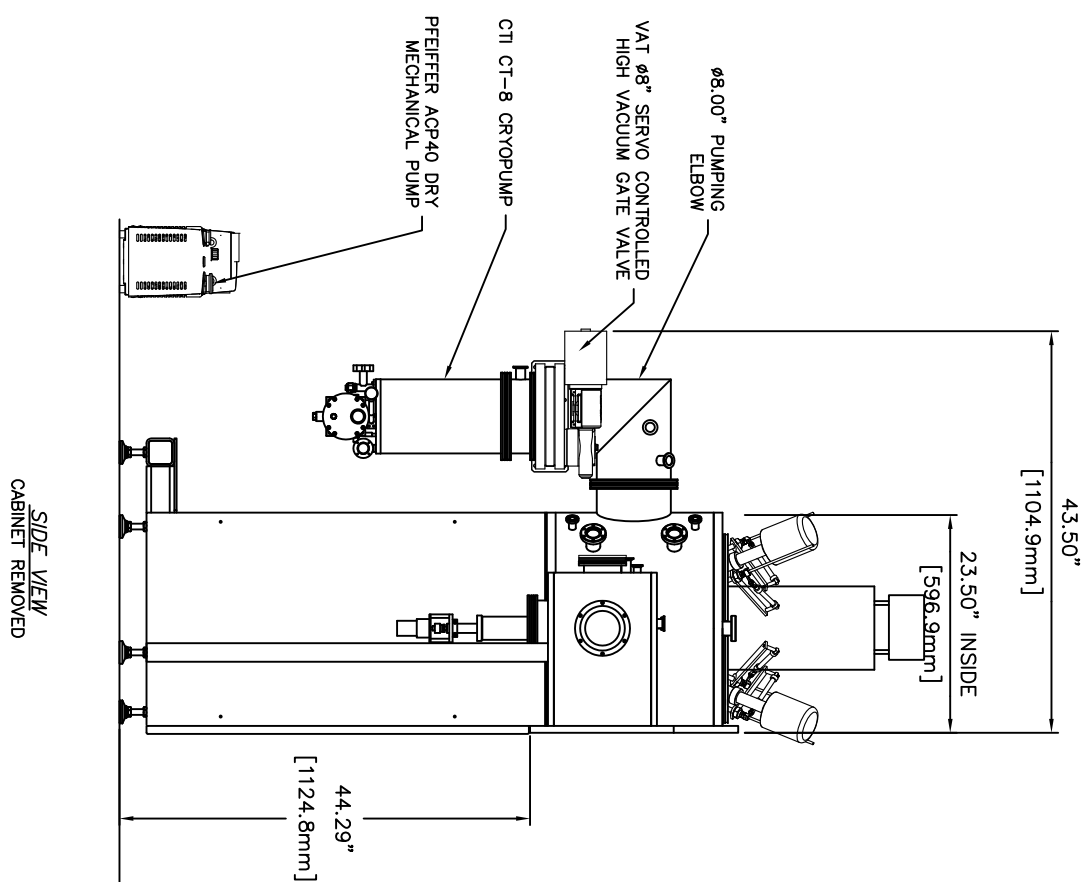
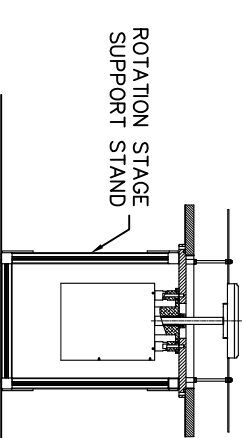
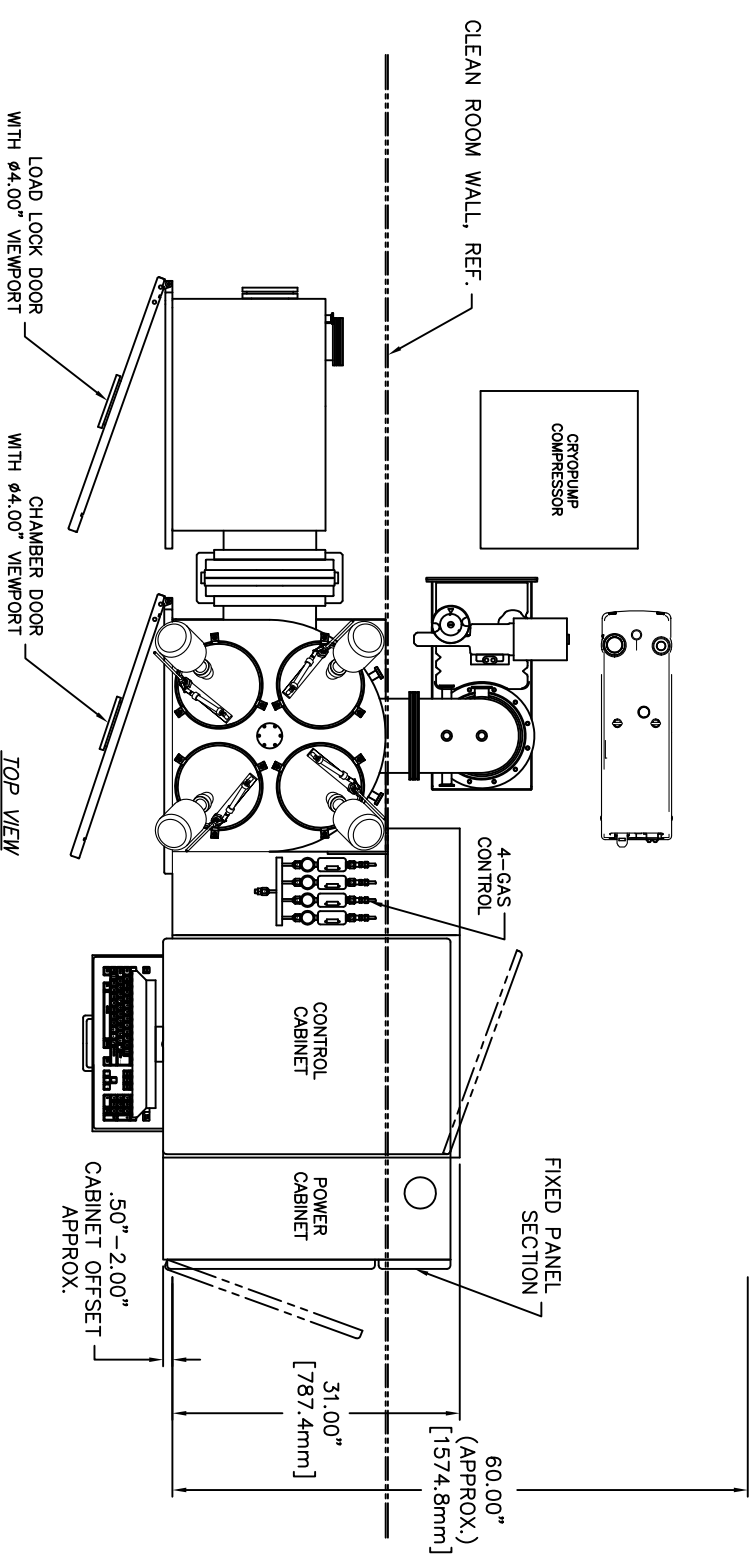
WATER PIPING ASSEMBLY
DISCOVERY SYSTEM
(8-STATION FLOW)

FILE: 0058-341-012
CLC: PMP009-0531
D-0058-341-012
SCALE: NTS
SHEET: 1/1

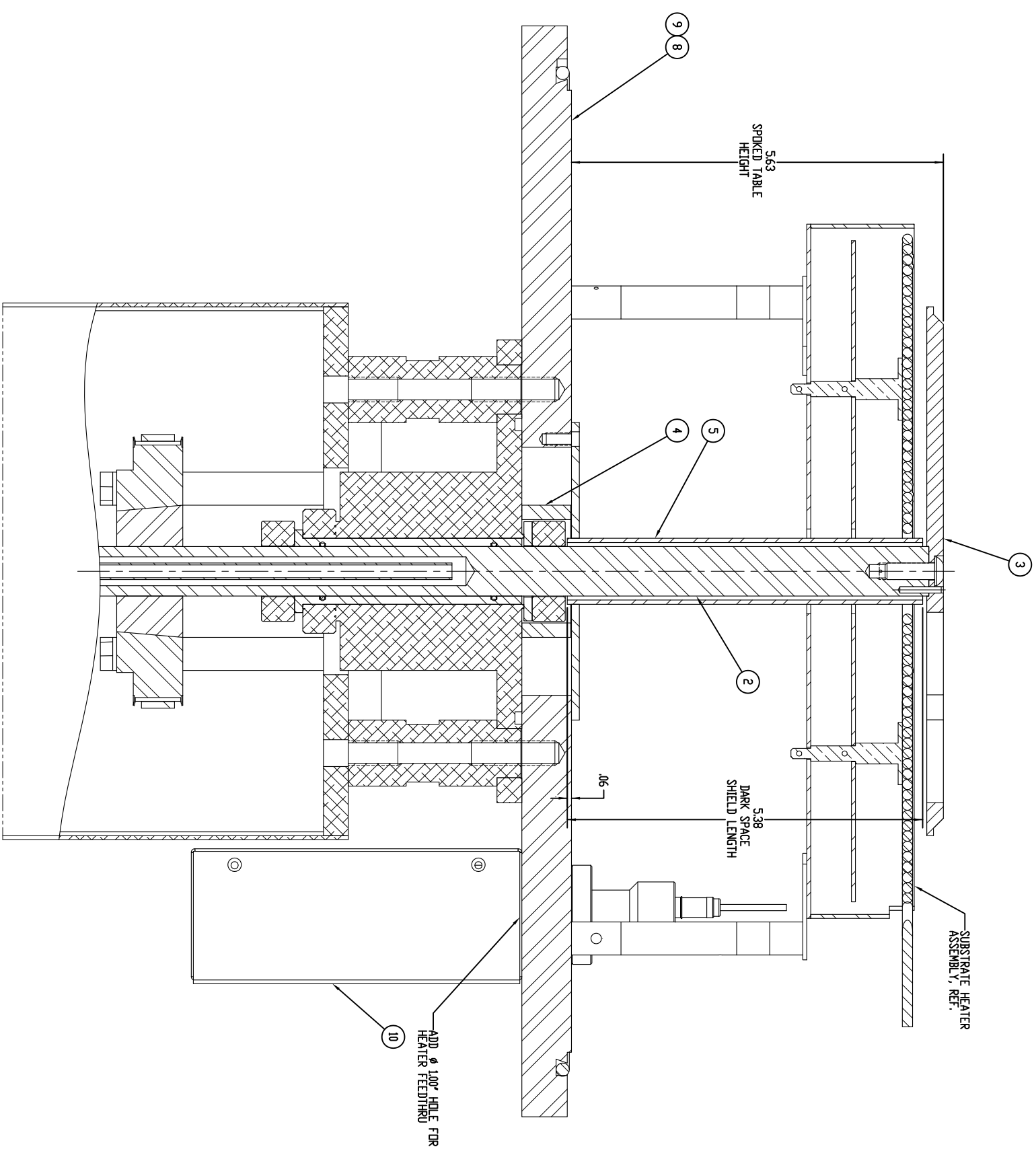
SYM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	3/31/15	STEVE G.

- NOTES:
1. GENERAL ARRANGEMENT AND FLOOR PLAN FOR CUSTOMER REVIEW ONLY.
 2. DRAWING NOT FOR ENGINEERING RELEASE.
 3. SUBSYSTEMS MAY NOT BE SHOWN IN PROPER PLACE OR SCALE FOR CLARITY.

DENTON VACUUM, LLC CONFIDENTIAL
 "PRELIMINARY SALES DRAWING"
 DESIGNS PRESENTED ARE NOT FINAL ENGINEERING PRINTS.
 ALL DIMENSIONS ARE APPROXIMATE UNTIL FINAL SYSTEM
 APPROVAL IS RECEIVED.



TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED				DATE	
UP TO 6	±.02	DRAWN	STEVE G.	3/31/15	
6 TO 24	±.03	CHECKED			
ABOVE 24	±.06	APPR.			
ANGULAR DIMENSIONS ± 1/2°					
ALL SURFACES TO BE UNLESS OTHERWISE SPECIFIED.					
THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DENTON VACUUM, LLC AND SHALL NOT BE REPRODUCED, COPIED, OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF EQUIPMENT WITHOUT PERMISSION.					
DENTONVACUUM					
GENERAL ARRANGEMENT AND FLOOR PLAN AND DISCOVERY LOAD LOCK					
FILE: 0058-344-002	PROJ: 69469	SCALE: NTS	SHEET: 1/1		



CABINET-0156	1	CABINET - ALUMINUM ENCLOSURE, 5' x 4' x 2', L-SHIELD COVER	BUD-CI-452-A	10
DRG004-0144	1	DRIVE-YIELD 1400' TD X 210' CS	-3B3	9
FL0001-0690	1	FLANGE - ϕ 1.50" OD, ϕ 1.125" HOLE, FERROUS/LUDIC MONI*	D-0058-344-011	8
HDV002-0196	1	SCREW, BUTTIN HEAD HEX SHD 1/4-20 X 3/4" LG. B-8 SS	MKC 92949K5/0	7
HDV002-0202	1	PRE-SPRING, SS, .094 DIA X .625 LONG	MKC 92939K0/6	6
SH0003-0241	1	SHIELD - DARK SPOKE, RF BIAS STAKE, .75" SWFT	C-0058-344-016	5
ISS001-0103	1	INSULATOR - SWFT COLLAR COVER, 7/8" THAL, RF BIAS	A-0044-017-279-01	4
TBL001-0195	1	TABLE, ϕ 80" SELF CENTERING SPOKE, INCONEL	B-0084-012-610	3
ST1001-0574	1	SWFT, HELIOW -VDRK HELDR ROTATION, PLANKWAY	B-0044-017-207-02	2
BLA001-0017	1	BIAS ROTATION ASSEMBLY - FERROUS/LUDIC SEAL	B-0044-017-024	1

ALL DIMENSIONS TO BE ASY UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED

DATE 04/14/15

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DENTON VACUUM

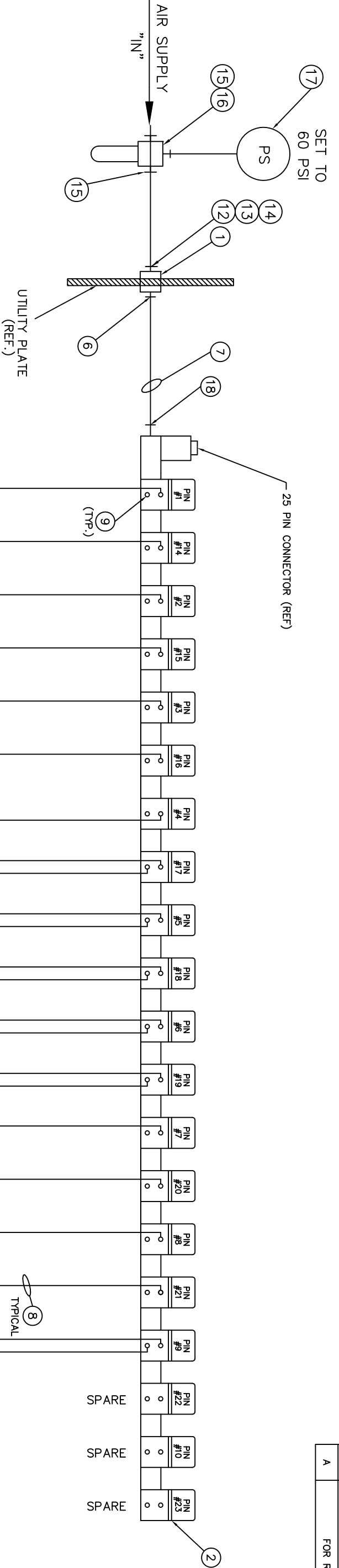
ROTATION ASSEMBLY - RF BIAS, 10" HEATER, 8" TABLE, SPECIAL FLANGE

D-0058-344-010

SCALE 1" = 1"

REV A

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	04/20/15	BES



- CHAMBER ROUGH VALVE
- LOAD/LOCK ROUGH VALVE
- CRYO REGEN VALVE
- CHAMBER VENT VALVE
- LOAD/LOCK VENT VALVE
- LOAD/LOCK ISOLATION VALVE
- CATHODE 1 SHUTTER
- CATHODE 2 SHUTTER
- CATHODE 3 SHUTTER
- CATHODE 4 SHUTTER
- SUBSTRATE SHUTTER
- CHAMBER GAS 1
- CHAMBER GAS 2
- CHAMBER GAS 3
- CHAMBER GAS 4
- LOAD LOCK UP/DOWN

CLC P/N	QTY	DESCRIPTION	DWG/PART NO	ITEM
FTG001-0197	1	FITTING-PLUG IN REDUCER, 5/16" TUBE TO 1/4" TUBE	K9807-08 (SM)	18
SM002-0160	1	SWITCH, PRESSURE, OPEN BELOW 848kPa(6.178MPa)	IS10-N01-6 (SM)	17
PMP008-0127	1	AIR FILTER/REGULATOR/GAUGE	14E1B18FB	16
FTG001-0101	4	MALE FITTING-1/4" T X 1/4" NPT	K0H07-35S	15
FTG005-0015	1	NIPPLE-REDUCING HEX, .25NPT X .12 NPT	216P-4-2	14
FTG001-0034	3	FITTING-MALE .25 OD X .12 MP-T	4-2-FBZ-8	13
FTG001-0062	2	FITTING-MALE .25 OD X .12 MP-T (PRESTOLOK)	68PL-4-2	12
FTG003-0033	8	FLOW CONTROL 5/32" T X 10-32	AS1201F-U10/32-03	11
FTG004-0004	1	TEE -UNION 1/4" TUBE	164PL-4	10
FTG001-0104	12	PLUG-5/32" TUBE	K9P-03	9
H0S001-0018	25'	TUBE-POLYETHYLENE 5/32"OD, YELLOW	5384K62(YEL)	8
H0S001-0019	3'	TUBE-POLYETHYLENE 1/4"OD, YELLOW	5384K63(YEL)	7
FTG001-0062	2	MALE FITTING-1/4" T X 1/8" NPT	68PL-4-2	6
FTG003-0038	10	MALE ELBOW-5/32" T X 1/8" NPT	K0L03-34S	5
FTG001-0099	10	MALE FITTING-5/32" T X 1/8" NPT	K0H03-34S	4
FTG003-0045	8	FLOW CONTROL 5/32" T X 1/8" NPT	NAS2201F-N01-03-S	3
PMP008-0445	1	MANIFOLD ASSEMBLY (20 STATION)	SY3000	2
FTG001-0008	2	CONNECTOR - BULKHEAD	207AGBH-2	1

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TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED

BASIC DIMENSION	2 PLACE DECIMALS	3 PLACE DECIMALS	DATE
UP TO 8	±.02	±.005	04/20/15
8 TO 24	±.03	±.010	CHECKED
ABOVE 24	±.08	±.015	DATE

ANGULAR DIMENSIONS ± 1/2°

ALL SURFACES TO BE ^{ASST} UNLESS OTHERWISE SPECIFIED.

DENTON VACUUM

AIR PIPING ASSEMBLY SPUTTERING SYSTEM (20-STATION)

D-0058-344-011

FILE: 0058-344-011

DWG#: PMP008-0453

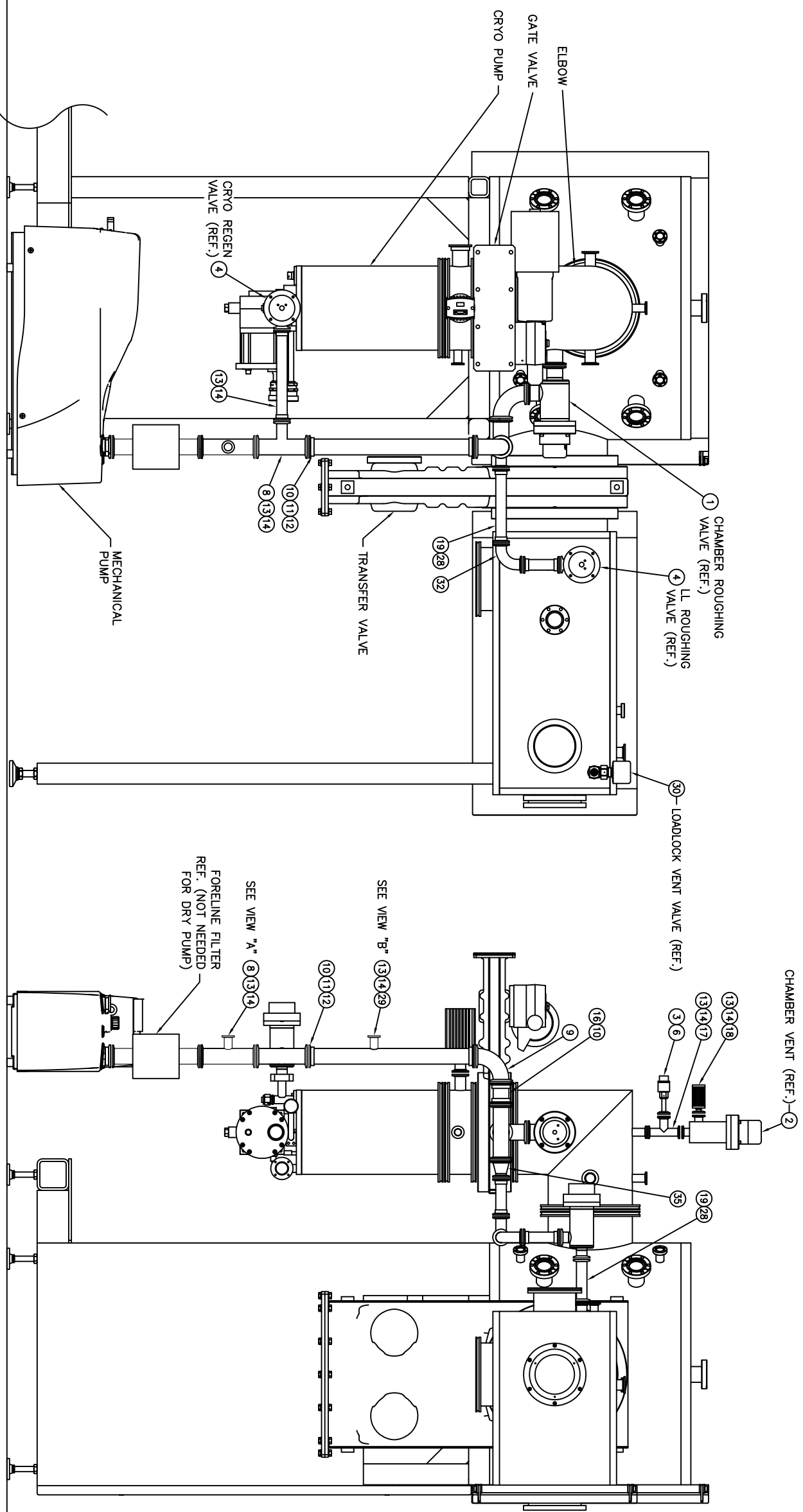
PROJ: D-0058-344-011

SCALE: NTS

SHEET: 1/1

REV: A

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	DATE	BES



CLC P/N	QTY	DESCRIPTION	DWG/PART NO	ITEM
PMP005-0355	1	CRYOPUMP PURGE VALVE KIT	CTI: 8080015K04	36
VFT003-0046	1	REDUCER-CONICAL, NW40 TO NW25, SS	100313714	35
VFT001-0249	2	FLANGE-FULL NIPPLE KF25 X KF25, 3.94" LG	100315103	34
VFT002-0160	1	ADAPTER-NW16 TO 1.33" CF	100315601	33
VFT003-0051	3	ELBOW-90 DEG, NW25 [304SS]	100314403	32
VFT002-0048	8	CLAMP-NW25	100312903	31
VAL003-0057	1	VALVE-NURRO, N/C, A/O, 1/4" MALE VCR	SS-4BK-VCR-1C	30
VFT001-0087	2	FLANGE-LONG WELD STUB NW16	100315711	29
SST001-0028	48"	TUBE-304SS, 1.00 OD X .065 W	SST-1.0000DX.065W	28
VFT003-0105	2	TEE-REDUCING NW25 TO NW16	100318403	27
VFT001-0075	4	FLANGE-BLANK, NW16	100311701	26
VFT001-0185	1	ADAPTER-NW25 TO 1/2" MPT STL	KSA-9625-2	25
VFT001-0184	1	ADAPTER-NW16 TO 1/2" MPT STL	KSA-9616-2	24
VFT002-0141	1	ELEMENT-COMPENSATION NW 40 W/ CLAMPS	182 80	23
VAL003-0004	1	VALVE-BALL 50 NPT SS	22-041	22
VFT002-0004	8	RING-CENTERING, NW25	100312703	21
VFT002-0152	1	ADAPTER, NW16 TO 1/8" MPT 304 SS	100316801	20
VFT001-0088	8	FLANGE-SOCKET WELD, NW25, SS	100318303	19
MUF001-0005	1	MUFFLER-FILTER, AIR INLET	4401K11	18
VFT003-0019	3	TEE-W/NW16 FLANGES	100314601	17
SST001-0037	60"	TUBE-304SS, 1.50 OD X .065 W	SST-1.500X.065W	16
FTG010-0003	6	GASKET-NICKEL PLATED VCR	NI-4-VCR-2	15
VFT002-0047	9	CLAMP-NW16	100312801	14
VFT002-0003	9	RING-CENTERING, NW16	100312701	13
VFT002-0049	12	CLAMP-NW40	100312905	12
VFT002-0005	12	RING-CENTERING, NW40	100312705	11
VFT001-0008	8	FLANGE-SOCKET WELD, NW40, SS	100318305	10
VFT003-0052	3	ELBOW-90 DEG, NW40 [304SS]	100314505	9
VFT003-0145	3	TEE-REDUCING NW40 TO NW25	100319816	8
VFT003-0021	2	TEE-W/NW40 FLANGES, 1.50 OD SS	100314605	7
VFT002-0150	2	ADAPTER-NW16 TO FEMALE 4 VCR	100319211	6
VAL004-0056	1	VALVE-SOLENOID, 24VDC N/O [M.P. VENT]	VSIDA1125-24	5
VAL001-0011	2	VALVE-RIGHT ANGLE, 1.00 A/O W/NW25 & SWITCH	152-1025K	4
SM001-0072	1	SWITCH-VACUUM, SINGLE POLE-DOUBLE THROW	WH17V-SH-K12L-X	3
VAL001-0010	1	VALVE-RIGHT ANGLE, .75 A/O W/NW16 & SWITCH	152-1016K	2
VAL001-0012	1	VALVE-RIGHT ANGLE, 1.50 A/O W/NW40 & SWITCH	152-1040K	1

DATE	DRWN	CHECKED	DATE
05/01/15			
DATE	DATE	DATE	DATE
APPROVED	APPROVED	APPROVED	APPROVED

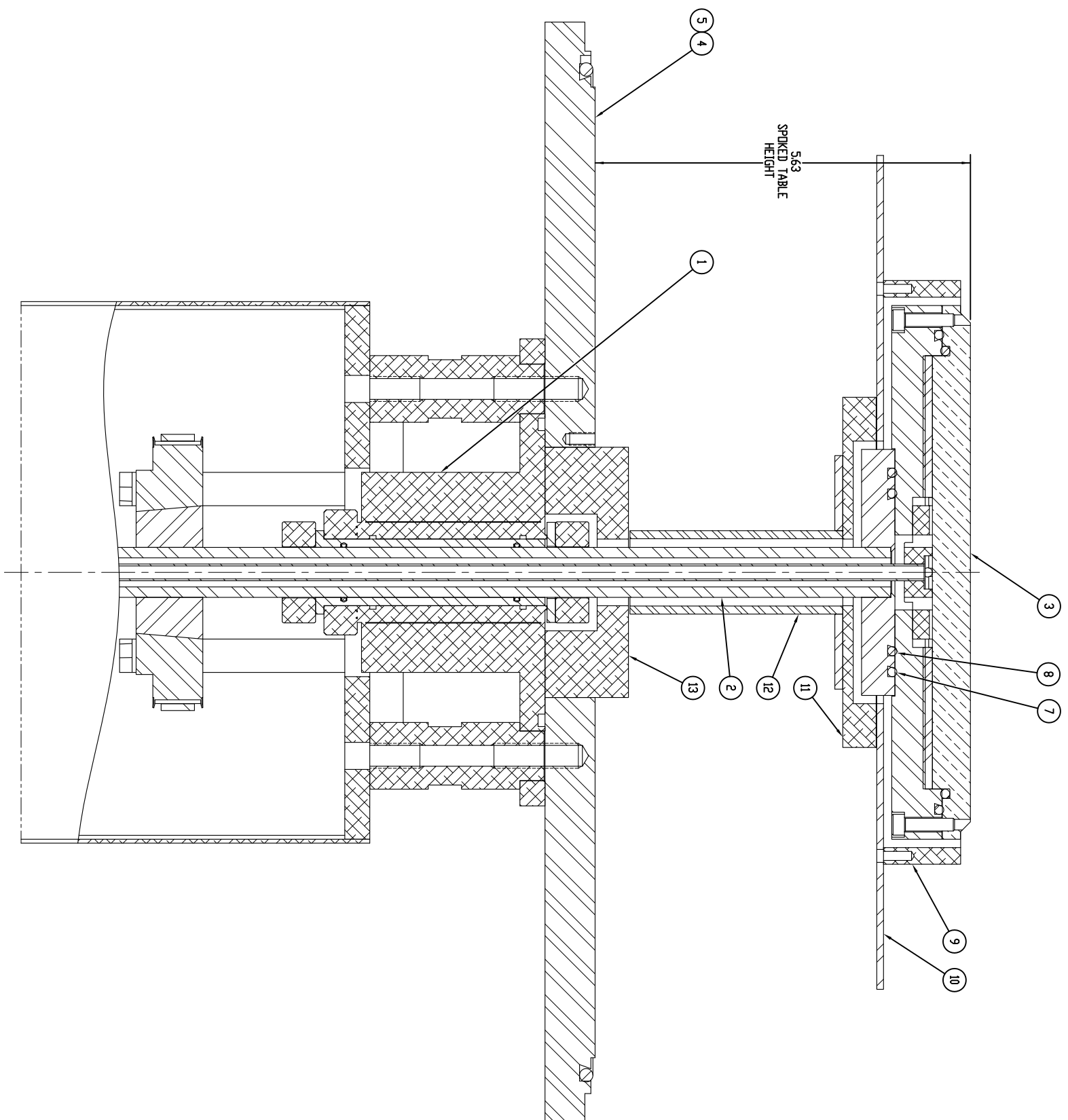
ALL SURFACES TO BE UNLESS OTHERWISE SPECIFIED.
 FILE: 0058-344-013
 PART#: PMP010-0467

DENTON VACUUM

VACUUM PIPING
ASSEMBLY
DISCOVERY WITH LL

REV A
SHEET 1/1

S/N	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	04/14/15	BES
B	ADDED REF DIMS	01/22/16	BES



ITEM	QTY	DESCRIPTION	DWG/PART#
SH0003-0260	2	SHIELD - DARK SPACE SWFT COLLAR 3.75" OD	A-0058-344-123
SH0003-0126	1	SHIELD WELDMENT - DARK SPACE 2-PIECE SWFT COVER 3.188" ID	B-0131-435-017-01
SH0003-0239	1	SHIELD - DARK SPACE ROTATION SWFT NUB 3.94" ID	B-0058-344-122
SH0003-0258	1	SHIELD - DARK SPACE 8" TABLE UNDERSTIE	B-0058-344-121
SH0003-0257	1	RING - DARK SPACE 8.00" DIA TABLE EDGE	B-0058-344-120
DR0004-0065	1	DRIVE-VITON 2.63" ID X 1.39" CS	5005-226
DR0004-0070	1	DRIVE-VITON 2.63" ID X 1.39" CS	5005-231
HDV002-0041	6	SCREW-SOCKET HD CAP SS 10-28 X 20 L6	-
DR0004-0144	1	DRIVE-VITON 1.60" ID X 2.0" CS	-393
FL0001-0690	1	FLANGE - 4" N52" OD, 4" N52" HOLE, FERROFLUIDIC MOUNT	D-0058-344-101
TB1001-0136	1	TABLE ASSEMBLY - WATER COOLED, 8.00" SELF CENTERING	C-0058-344-021
ST1001-0536	1	SWFT WELDMENT - 4" 75" BOREABLE, WATER COOLED TABLE 1.98" CS	C-0044-017-024-01
BA0001-0017	1	BASE ROTATION ASSEMBLY - FERROFLUIDIC SEAL	B-0044-017-024
PART#	QTY	DESCRIPTION	DWG/PART#

DENTON
VACUUM

ROTATION ASSEMBLY - WATER COOLED 8" TABLE, SPECIAL FLANGE

D-0058-344-014

SCALE: 1" = 1"

DATE: 04/14/15

APPROVED: BES

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS TO BE ± 1/2"

DATE: 04/14/15
DESIGNED BY: BES
CHECKED BY: BES
DATE: 04/14/15

DATE: 04/14/15
DATE: 04/14/15
DATE: 04/14/15

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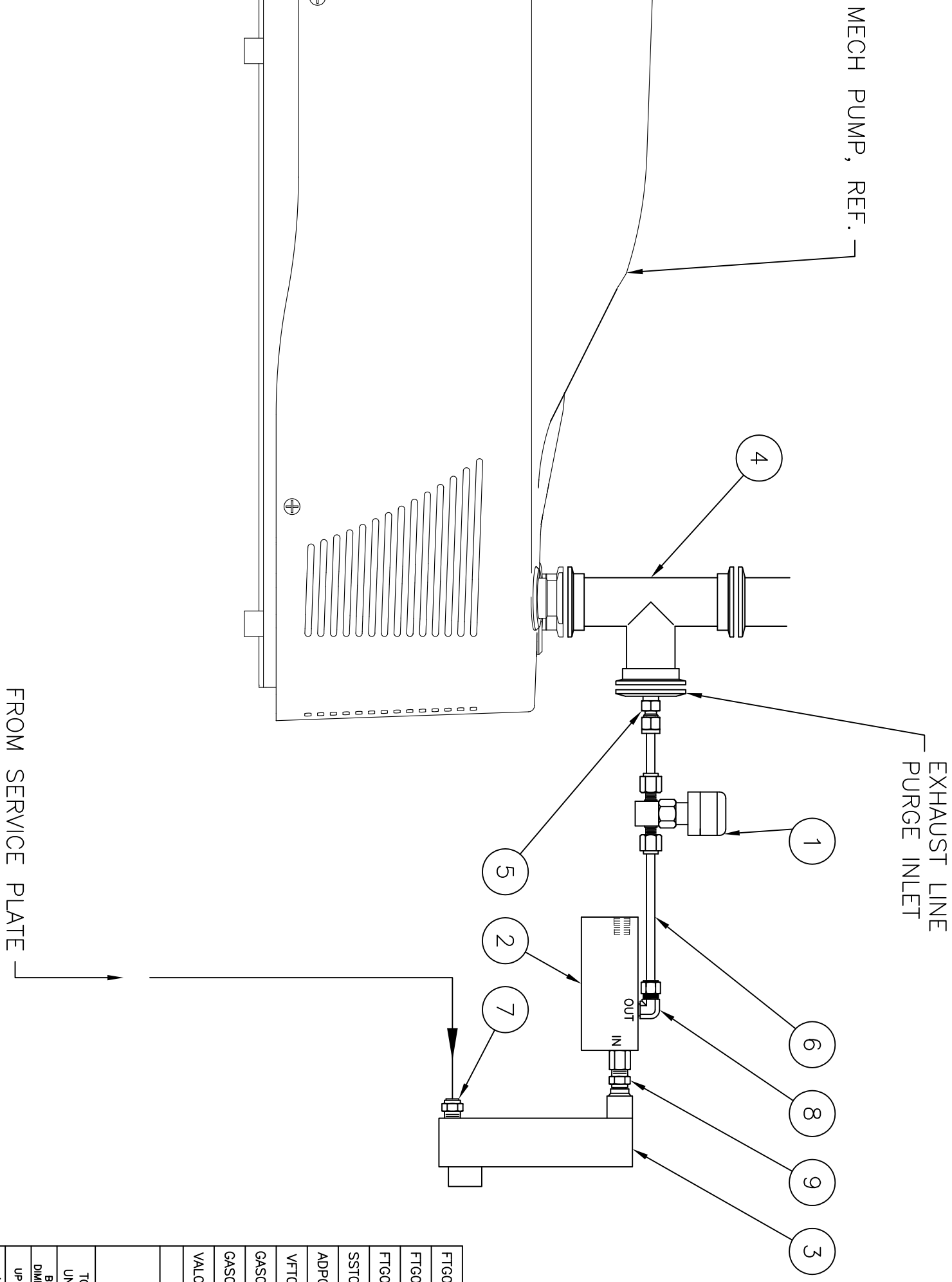
DATE: 04/14/15
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DATE: 04/14/15
DATE: 04/14/15
DATE: 04/14/15

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	08/14/15	BES



PART#	QTY	DESCRIPTION	DWG/PART#	ITEM
FTG005-0020	1	NIPPLE-.25 NPT-SS	4-4MCN-SS	9
FTG003-0050	1	ELBOW - MALE .25" TUBE X .25" MPPT	SS-400-2-4	8
FTG001-0245	1	FITTING-PUSH TO CONNECT 1/2" TUBE X 1/4" NPT	5779K119	7
SST001-0009	48"	TUBE-304SS .25" OD. X .049" WALL	SST-.25ODX.049W	6
ADP001-0111	1	FLANGE ADAPTER - NW40 WITH .25" OD TUBE	A-8012-029	5
VFT003-0021	1	TEE-1.50" TUBE WITH NW40 FLANGES	100314605	4
GAS001-0134	1	FLOWMETER-BRASS INLET NEEDLE VALVE 4-50 SCFH	KFR-2106-V1	3
GAS001-0135	1	FLOW SWITCH-FIXED 1700 SERIES SET AT 32 SCFH	45376	2
VAL003-0030	1	VALVE-BELLOWS SEALED 1/4" SWAGelok	SS-4BK-1C	1

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DENTON VACUUM

TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED	DRAWN	DATE
BASIC DIMENSION	BES	08/14/15
UP TO 6	CHECKED	DATE
6 TO 24	APPD.	DATE
ABOVE 24		

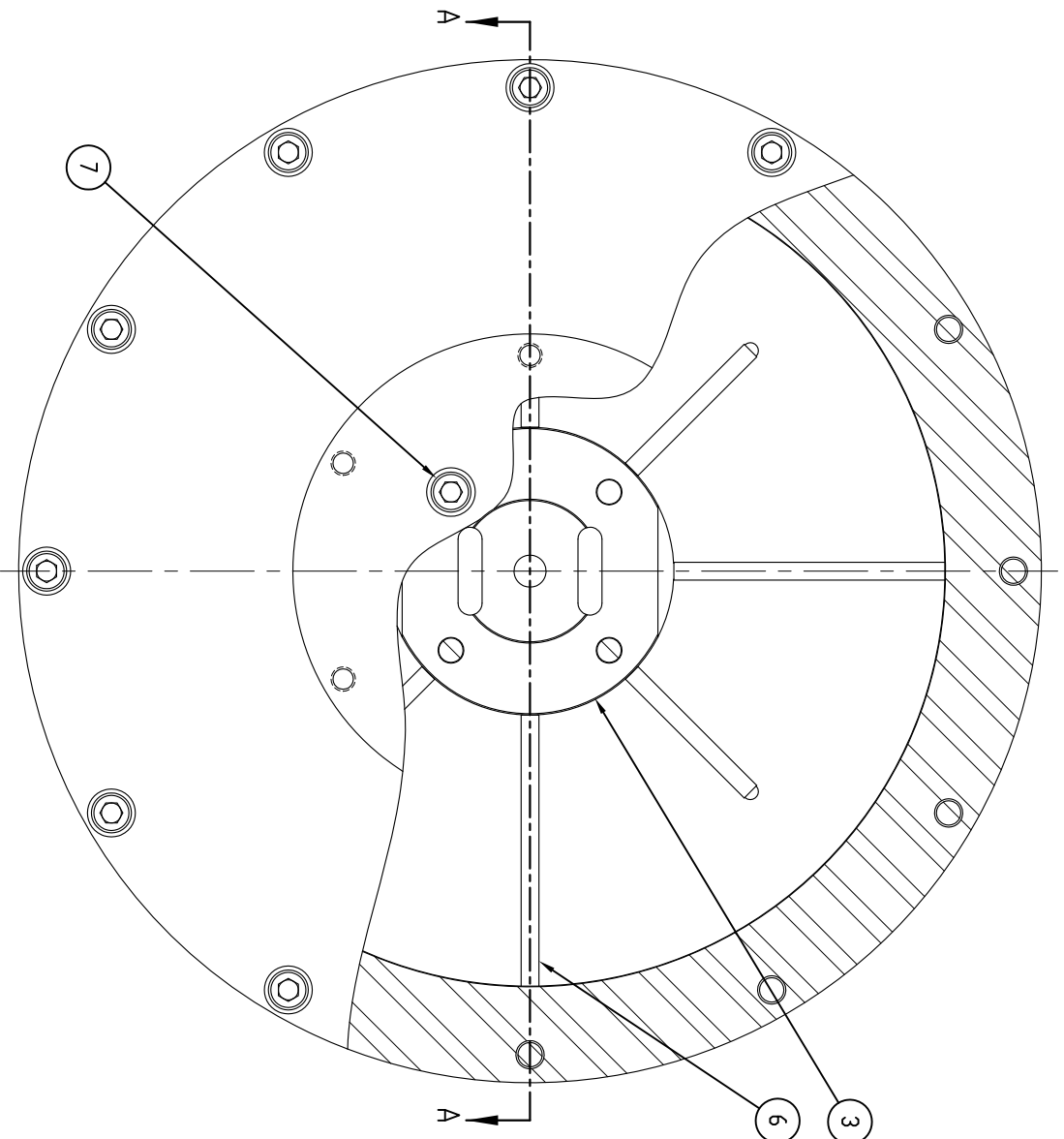
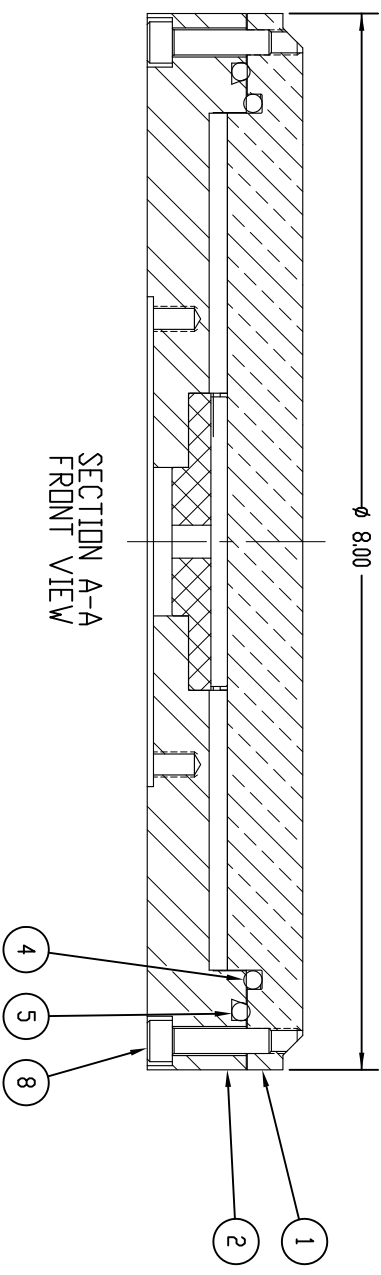
ANGULAR DIMENSIONS ± 1/2°	
±.02	±.005
±.03	±.010
±.06	±.015

ALL SURFACES TO BE ^{63ST} UNLESS OTHERWISE SPECIFIED.

GAS PURGE ASSEMBLY
NITROGEN, MECH PUMP
WITH NW40 INLET

FILE: 0058-344-020	B-0058-344-020	REV
PART#: GAS001-0198		A
	PROJ	SCALE
		NTS
		SHEET
		1/1

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	04/16/15	BES



6 CUT TO LENGTHS REQUIRED THEN CEMENT INTO GROOVES IN TOP PLATE

PART#	QTY	DESCRIPTION	DWG/PART#	ITEM
HDW002-0043	12	SCREW-SOCKET HD CAP SS 10-32 X .75 LG.	-	8
HDW002-0042	4	SCREW-SOCKET HD CAP-SS 10-32 X .62 LG	-	7
DRG001-0164	14*	CORB. O-RING, BUNA-N, .139" CS	MCHC-9407K12	6
DRG004-0098	1	ORING - VITON 6.75 ID X .139 CS	5015-261	5
DRG004-0097	1	ORING - VITON 6.50 ID X .139 CS	5015-260	4
INS001-0067	1	INSERT - WATER ROUTING	B-0131-417-103	3
FLG001-0680	1	FLANGE, SST, - LOWER, WATER COOLED PLATEW, 8.00" FR	C-0131-550-112	2
FLG001-0719	1	FLANGE, COPPER- UPPER, WATER COOLED PLATEW, 8.00" FR	C-0131-550-111-02	1

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TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED
 DRAWN BES 04/16/15
 CHECKED DATE

APPROVALS:
 DATE DATE
 DATE DATE

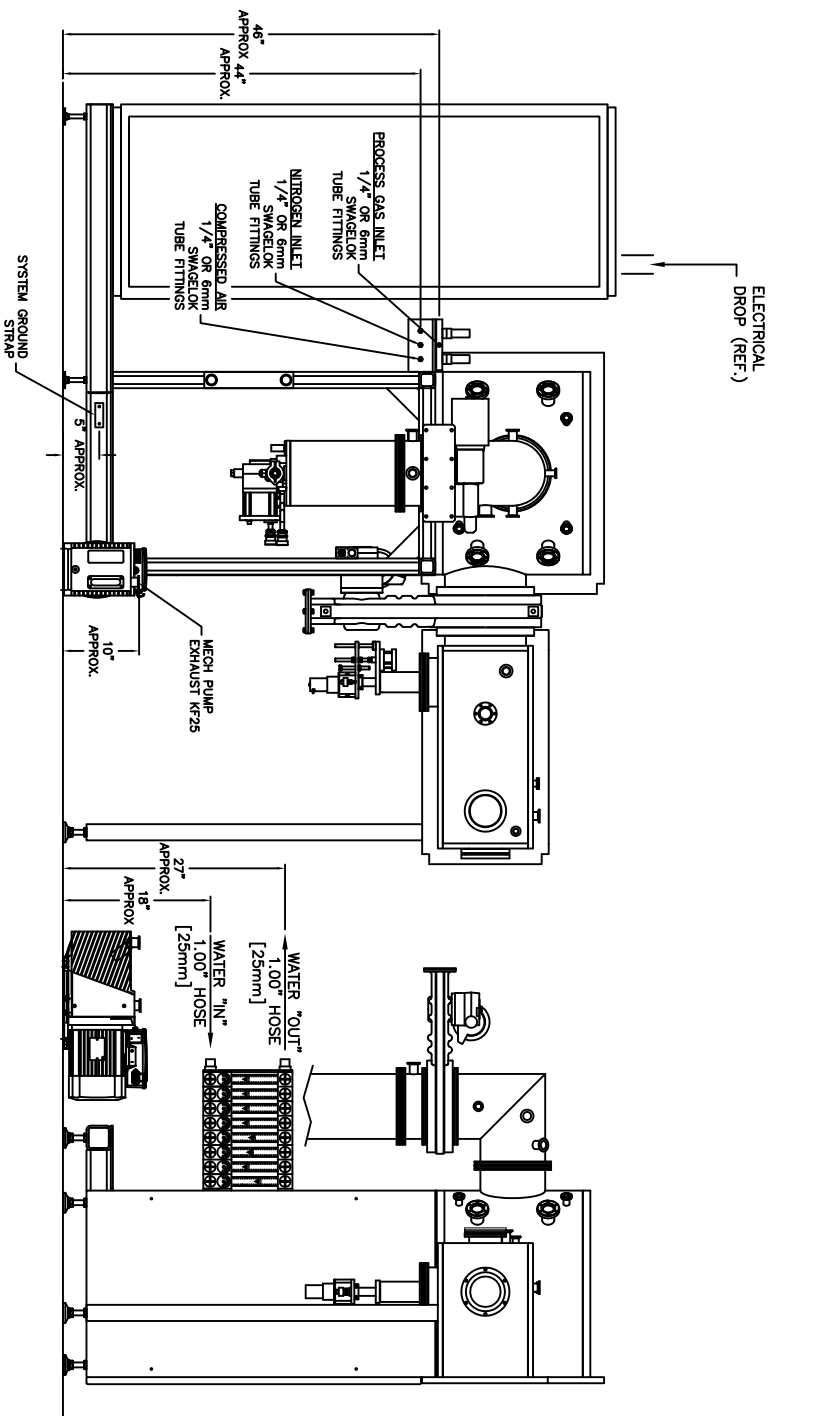
ANGULAR DIMENSIONS ± 1/2°
 ALL SURFACES TO BE FINISH UNLESS OTHERWISE SPECIFIED

STANDARD UNITS: INCH
 DUAL DIMENSIONS: INCH/MM
 FILE: 0058-344-021
 PART#: TL001-0135
 ORG. JOB: -
 SCALE: 1:1
 SHEET: 1 OF 1
 REV: A

DENTON VACUUM

TABLE ASSEMBLY-WATER
 COOLED, BIASED
 Ø 8.00" SELF-CENTERING

SM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	07/23/76	STEVE G.



- * ELECTRICAL:
 - 208 VAC (±5%), 50/60 Hz, 3ø, 90 AMP, 5 WIRE
 - PANELIZED CONTROL WITH SINGLE ENTRANCE PROTECTION BY HEAVY DUTY DISCONNECT SWITCH WITH PANELIZED "LOOKOUT" PROVISION, PROVIDED BY DIV.
 - ACTUAL ELECTRICAL REQUIREMENTS SUBJECT TO COMPLETION OF ELECTRICAL SCHEMATICS. CONTACT DIV FOR FINAL SYSTEM SPECIFICATIONS.

- * COOLING WATER:
 - 7.5-10 GPM (28.4-38 L/MIN), 65-77°F (18-25°C), 40-50 PSI (2.7-3.4 BAR) DIFFERENTIAL BETWEEN SUPPLY & RETURN
 - 55 PSI (3.8 BAR) MAXIMUM INLET PRESSURE
 - MULTI-CIRCUIT WATER MANIFOLD: SUPPLY & RETURN METERING VALVES ON EACH CIRCUIT WITH TEMPERATURE INDICATION ON EACH CIRCUIT'S RETURN LINE. WATER CIRCUITS REQUIRING FLOW "SENSE" (HARDWARE INTERLOCKS) WILL BE EQUIPPED WITH AN INLINE FLOW INTERLOCK SWITCH. CIRCUIT DESIGNATIONS ARE AS FOLLOWS:
 - 1.) SPUTTER CATHODE #1 (FLOW SENSE/INTERLOCK)
 - 2.) SPUTTER CATHODE #2 (FLOW SENSE/INTERLOCK)
 - 3.) SPUTTER CATHODE #3 (FLOW SENSE/INTERLOCK)
 - 4.) SPUTTER CATHODE #4 (FLOW SENSE/INTERLOCK)
 - 5.) RF BIAS STAGE/MATCH NETWORK (FLOW SENSE/INTERLOCK)
 - 6.) CRYO COMPRESSOR
 - 7.) CHAMBER
 - 8.) SPARE

- * COMPRESSED AIR:
 - DRY SHOP AIR, 90-100 PSI (6-7 BAR) FOR SYSTEM
 - NORMAL OPERATION
 - VENT TO ATMO
 - DEW POINT: MAXIMUM OF 2° CENTIGRADE
 - OIL CONTENT: 1-5 mg/m³
 - FOREIGN PARTICLES, SIZE: MAXIMUM OF 5 MICRONS, AND FOREIGN PARTICLES, CONCENTRATION: MAXIMUM OF 5 mg/m³

- * NITROGEN: (PREFERENTIALLY EVAPORATED FROM LIQUID LN₂):
 - 10 PSI (0.7 BAR) CRYOPUMP REGENERATION (RECOMMENDED)
 - CHAMBER/LOAD LOCK VENTING (OPTIONAL)

- * PROCESS GAS: 5N PURITY
 - 10 PSI (0.7 BAR) FOR EACH LINE (CUSTOMER SUPPLIED)

- * INTERNET CONNECTION (FOR PROCESS PRO EQUIPPED SYSTEMS ONLY):
 - PROVIDES REMOTE ACCESS FOR FACTORY TROUBLESHOOTING OF SYSTEM OR PROCESS BY DENTON PERSONNEL

- * ELECTRICAL GROUNDING:
 - GROUND CONNECTION MUST BE BETWEEN VACUUM SYSTEM & BUILDING STEEL.
 - DENTON SUPPLIES 25' OF 3" X .050" FLAT COPPER CONDUCTOR. COPPER CONDUCTOR IS BOLTED TO SIDE OF ELECTRICAL DISTRIBUTION BOX AT LEFT REAR OF SYSTEM AND IS BOLTED TO THE NEAREST AVAILABLE BUILDING STEEL.
 - NEVER INTERRUPT THE PROTECTED EARTH GROUND.

REAR VIEW

SIDE VIEW

DATE	BY	CHKD	APP'D	DATE	DATE	DATE
DESIGNED	DATE	DATE	DATE	DATE	DATE	DATE
DRAWN	DATE	DATE	DATE	DATE	DATE	DATE
CHECKED	DATE	DATE	DATE	DATE	DATE	DATE
APPROVED	DATE	DATE	DATE	DATE	DATE	DATE

ALL SURFACES TO BE FINISHED UNLESS OTHERWISE SPECIFIED.

FILE: 0058-344-100 PARTS: 0058-3013

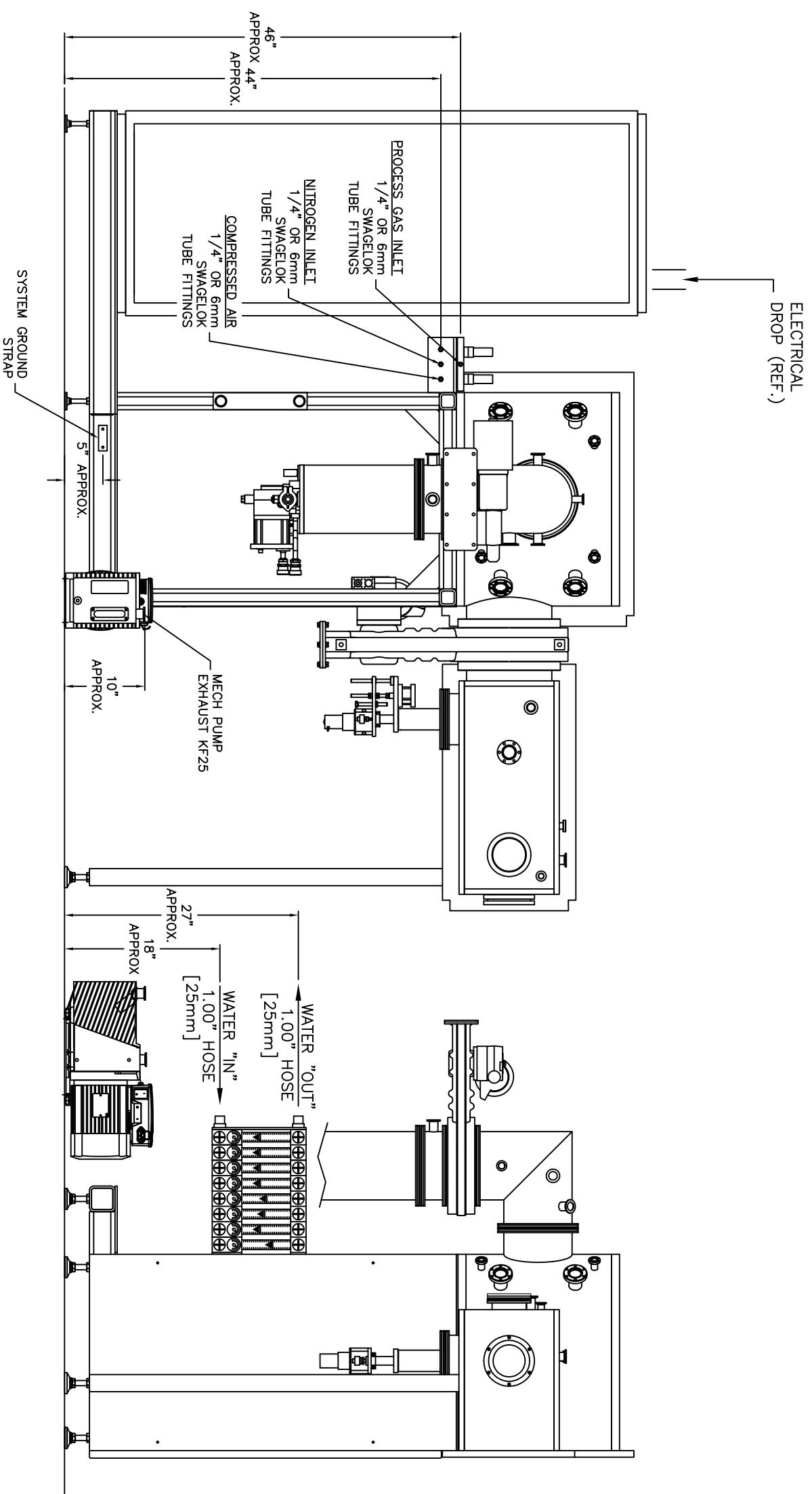
D-0058-344-100

UTILITY ARRANGEMENT DISCOVERY 635 WITH LOAD LOOK

DENTON VACUUM

DATE: 1/1

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	07/23/15	STEVE G.



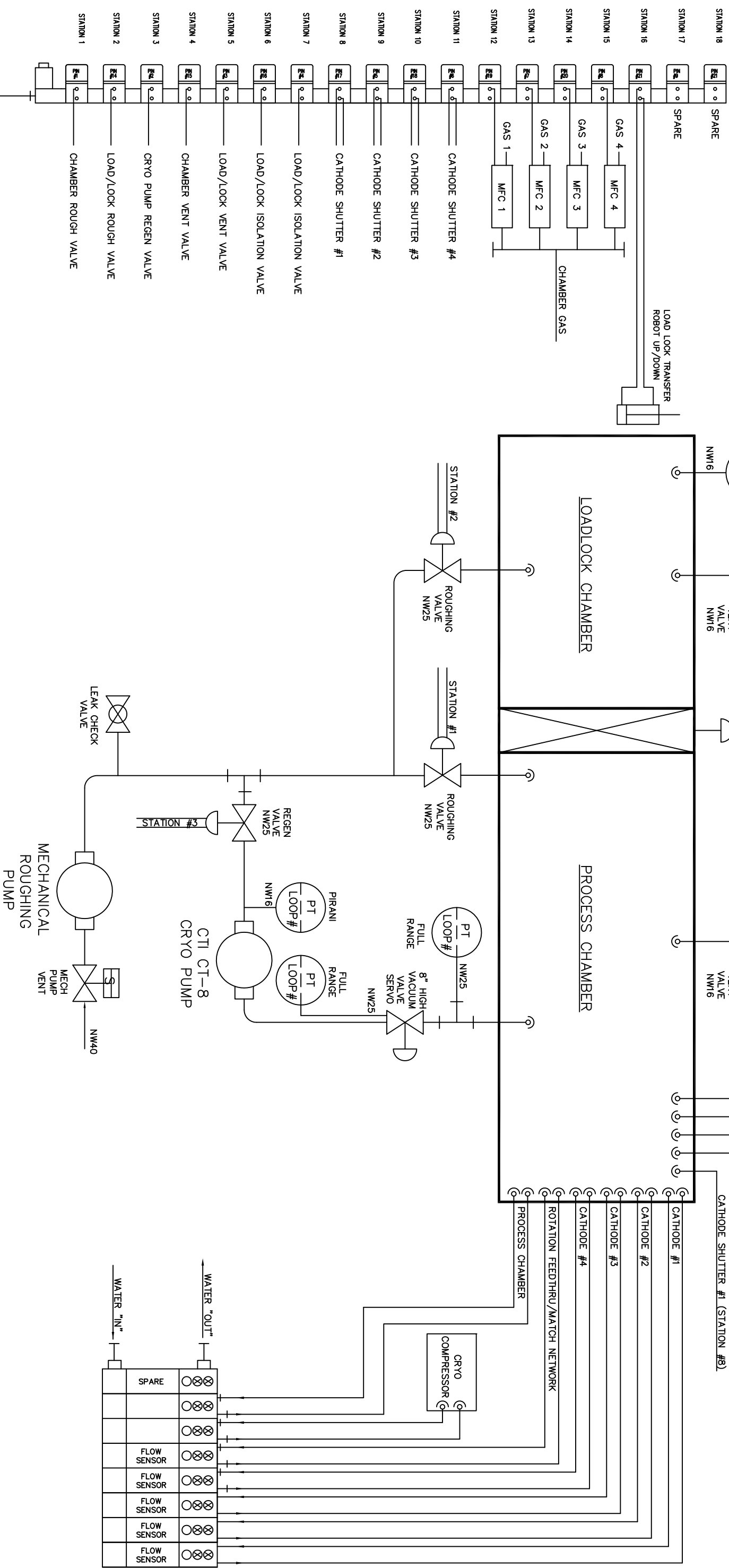
- * ELECTRICAL:
 - 208 VAC (±5%), 50/60 Hz, 3ø, 90 AMP, 5 WIRE
 - PANELIZED CONTROL WITH SINGLE ENTRANCE PROTECTION BY HEAVY DUTY DISCONNECT SWITCH WITH PANELIZED "LOCKOUT" PROVISION, PROVIDED BY DVI.
 - ACTUAL ELECTRICAL REQUIREMENTS SUBJECT TO COMPLETION OF SYSTEM SCHEMATICS. CONTACT DVI FOR FINAL SYSTEM SPECIFICATIONS.
- * COOLING WATER:
 - 7.5-10 GPM (28.4-38 L/MIN), 65-77°F (18-25°C), 40-50 PSI (2.7-3.4 BAR) DIFFERENTIAL BETWEEN SUPPLY & RETURN
 - 55 PSI (3.8 BAR) MAXIMUM INLET PRESSURE).
 - MULTI-CIRCUIT WATER MANIFOLD: SUPPLY & RETURN METERING VALVES ON EACH CIRCUIT WITH TEMPERATURE INDICATION ON EACH CIRCUIT'S RETURN LINE. WATER CIRCUITS REQUIRING FLOW "SENSE" (HARDWARE INTERLOCKS) WILL BE EQUIPPED WITH AN INLINE FLOW INTERLOCK SWITCH. CIRCUIT DESIGNATIONS ARE AS FOLLOWS:
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 - 3.) SPUTTER CATHODE #3 (FLOW SENSE/INTERLOCK)
 - 4.) SPUTTER CATHODE #4 (FLOW SENSE/INTERLOCK)
 - 5.) RF BIAS STAGE/MATCH NETWORK (FLOW SENSE/INTERLOCK)
 - 6.) CRYO COMPRESSOR
 - 7.) CHAMBER
 - 8.) SPARE
- * COMPRESSED AIR:
 - NORMAL DRY SHOP AIR, 90-100 PSI (6-7 BAR) FOR SYSTEM
 - VALVE OPERATION
 - DEW POINT: MAXIMUM OF 2° CENTIGRADE
 - OIL CONTENT: 1-5 mg/m³
 - FOREIGN PARTICLES, SIZE: MAXIMUM OF 5 MICRONS, AND FOREIGN PARTICLES, CONCENTRATION: MAXIMUM OF 5 mg/m³
- * NITROGEN: (PREFERENTIALLY EVAPORATED FROM LIQUID LN₂):
 - 10 PSI (0.7 BAR) CRYOPUMP REGENERATION (RECOMMENDED)
 - CHAMBER/LOAD LOCK VENTING (OPTIONAL)
- * PROCESS GAS: 5N PURITY
 - 10 PSI (0.7 BAR) FOR EACH LINE (CUSTOMER SUPPLIED)
- * INTERNET CONNECTION (FOR PROCESS PRO EQUIPPED SYSTEMS ONLY):
 - PROVIDES REMOTE ACCESS FOR FACTORY TROUBLESHOOTING OF SYSTEM OR PROCESS BY DENTON PERSONNEL
- * ELECTRICAL GROUNDING:
 - GROUND CONNECTION MUST BE BETWEEN VACUUM SYSTEM & BUILDING STEEL.
 - DENTON SUPPLIES 25' OF 3" X .050" FLAT COPPER CONDUCTOR.
 - COPPER CONDUCTOR IS BOLTED TO SIDE OF ELECTRICAL DISTRIBUTION BOX AT LEFT REAR OF SYSTEM AND IS BOLTED TO THE NEAREST AVAILABLE BUILDING STEEL.
 - NEVER INTERRUPT THE PROTECTED EARTH GROUND.

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DATE	DRAWN
DATE	STEVE G. 7/23/15
TOLERANCES UNLESS OTHERWISE SPECIFIED	DECIMALS
UP TO 6	±.02
6 TO 24	±.03
ABOVE 24	±.05
ANGULAR DIMENSIONS ± 1/2°	APPROX.
ALL SURFACES TO BE UNLESS OTHERWISE SPECIFIED.	DATE
FILE: 0058-344-100	DATE
PART# DWG004-0513	DATE
D-0058-344-100	DATE
SCHEMATIC	DATE
SHEET	DATE
1/1	DATE

DENTON VACUUM

UTILITY ARRANGEMENT
DISCOVERY 6.35
WITH LOAD LOCK

REV.	DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	10/22/14	STEVE G.



LEGEND

- PIRANI
- SAFETY SWITCH
- VENT VALVE NW16
- ROUGHING VALVE NW25
- REGEN VALVE NW25
- PT LOOP #
- 8" HIGH VACUUM VALVE SERVO NW25
- CHAMBER GAS
- CATHODE SHUTTER #4 (STATION #11)
- CATHODE SHUTTER #3 (STATION #10)
- CATHODE SHUTTER #2 (STATION #9)
- CATHODE SHUTTER #1 (STATION #8)
- CHAMBER GAS
- CATHODE #1
- CATHODE #2
- CATHODE #3
- CATHODE #4
- ROTATION FEEDTHRU/MATCH NETWORK
- PROCESS CHAMBER
- CRYO COMPRESSOR
- WATER "OUT"
- WATER "IN"
- MECH PUMP VENT
- MECH PUMP
- LEAK CHECK VALVE
- STATION #2
- STATION #1
- STATION #3
- STATION #4
- STATION #5
- STATION #6
- STATION #7
- STATION #8
- STATION #9
- STATION #10
- STATION #11
- STATION #12
- STATION #13
- STATION #14
- STATION #15
- STATION #16
- STATION #17
- STATION #18
- SPARE
- GAS 1 - MFC 1
- GAS 2 - MFC 2
- GAS 3 - MFC 3
- GAS 4 - MFC 4
- CHAMBER GAS
- LOAD LOCK TRANSFER ROBOT UP/DOWN
- CATHODE SHUTTER #4
- CATHODE SHUTTER #3
- CATHODE SHUTTER #2
- CATHODE SHUTTER #1
- LOAD/LOCK ISOLATION VALVE
- LOAD/LOCK ISOLATION VALVE
- LOAD/LOCK ISOLATION VALVE
- LOAD/LOCK ISOLATION VALVE
- LOAD/LOCK VENT VALVE
- CHAMBER VENT VALVE
- CRYO PUMP REGEN VALVE
- LOAD/LOCK ROUGH VALVE
- CHAMBER ROUGH VALVE

LEGEND

- MANUAL BALL VALVE
- SOLENOID VALVE
- PNEUMATIC OPERATED VALVE
- VACUUM PUMP
- PRESSURE SWITCH
- PRESSURE TRANSMITTER
- PRESSURE TRANSDUCER

NOTE: THESE DIMENSIONS AND SPECIFICATIONS ARE THE PROPERTY OF DENTON VACUUM, LLC AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE FABRICATION OR CONSTRUCTION OF ANY EQUIPMENT UNLESS OTHERWISE SPECIFIED.

DATE: 7/20/13
BY: STEVE G.
CHECKED: []
DATE: []
APPROVED: []
DATE: []

ALL SURFACES TO BE 45° UNLESS OTHERWISE SPECIFIED.

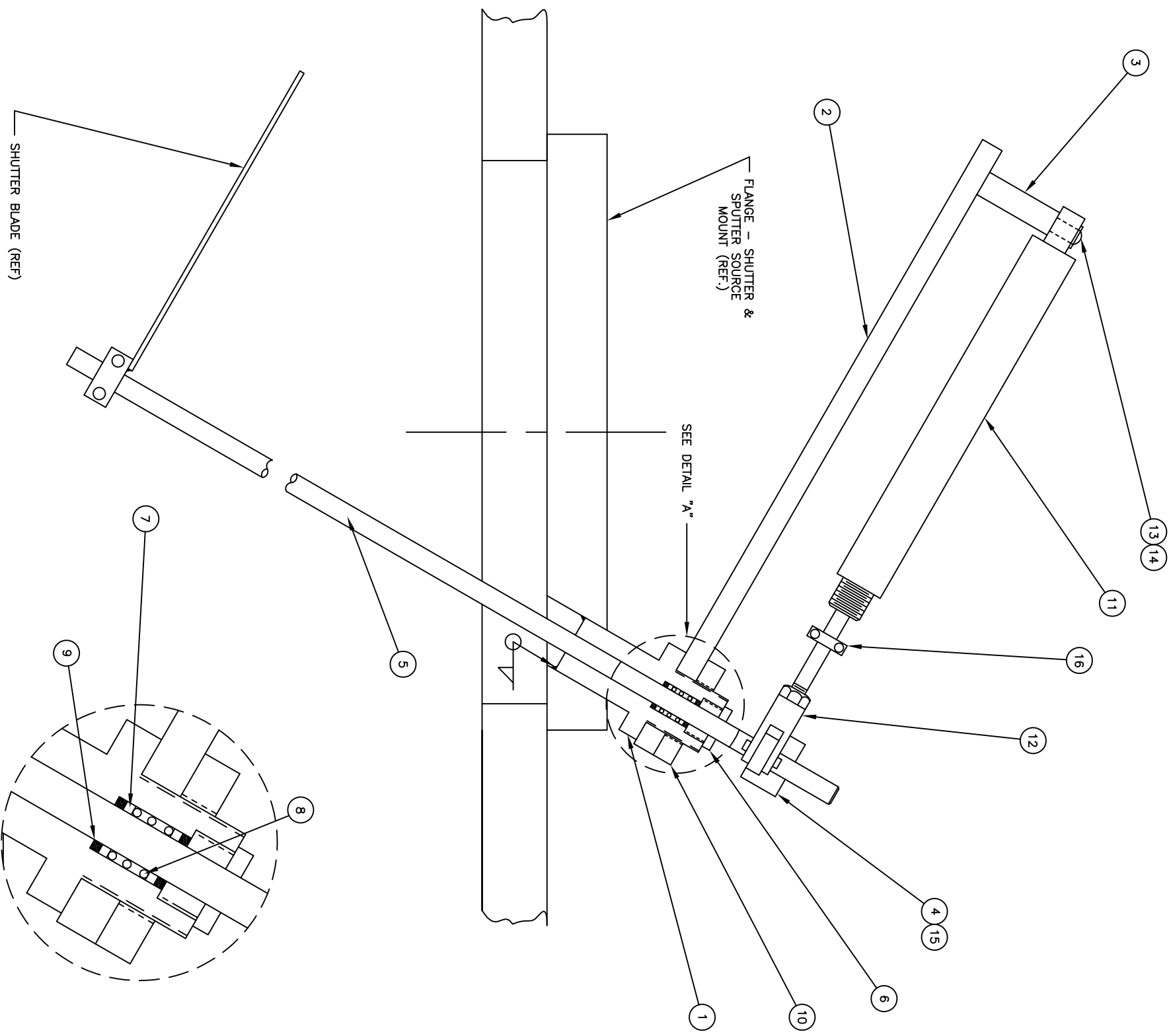
DENTON VACUUM

SCHEDULED PAID (PROCESS AND INSTRUMENTATION DIAGRAM), DISCOVERY 635

D-0058-344-110

SCALE: NONE

SHEET 1/1



CLC P/N	QTY	DESCRIPTION	DWG/PART NO	ITEM
FTG001-0058	2	CONNECTOR-10-32 THD. * .12 T	68PL-2-10*32	17
BRG019-0013	1	COLLAR-SPLIT, .25 ID SS MAC-IT	15508	16
HDW008-0004	1	SCREW, HEX HEAD SET-STN. STL.	10-32 * .38 LG (S)	15
HDW007-0027	1	WASHER, FLAT # 4 NOM.	4 NOM.	14
HDW002-0056	1	SCREW, SOCKET HEAD CAP-STN. STL.	4-40 * .38 LG.	13
CYL002-0008	1	CLEVIS-ROD HUMPHREY	CT-8	12
CYL001-0065	1	AIR CYLINDER, 3" STROKE	.44 DXPSR 3.000	11
HDW011-0017	1	NUT-HEAVY HEX, STN STL.	.75-10 THD	10
ORG004-0003	2	ORING-VITON	5015-010	9
SPR001-0039	1	SPRING COMPRESSION (LEE)	LC-032E-1	8
ROT001-0046	2	SPACER-ROTARY MOTION (SMALL)	A-0041-001-034-2	7
DWG001-0114	1	NUT-SPECIAL, BRASS .62 HEX * .75 LG.	A-0100-055-126	6
SFT001-0097	1	SHAFT (MAT'L SEE DWG.)	A-8011-002-07	5
ARM001-0009	1	PIVOT ARM 304SS .50 * .75 * 2.00 LG.	A-0084-020-115	4
HDW037-0027	1	STUD, 303SS .38 DIA * 1.88 LG.	A-0084-020-114	3
PLT004-0140	1	MOUNT PLATE, ALUM. FOR 3" CYLINDERS	A-0084-020-204	2
BOD001-0026	1	SUPPORT BODY (ROTARY MOTION)	A-0084-020-133	1

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DRAWN DATE
D. NELLI 7/14/05

CHECKED DATE
DATE

APPD. DATE
DATE

DENTON VACUUM INC.
MOORESTOWN, NJ

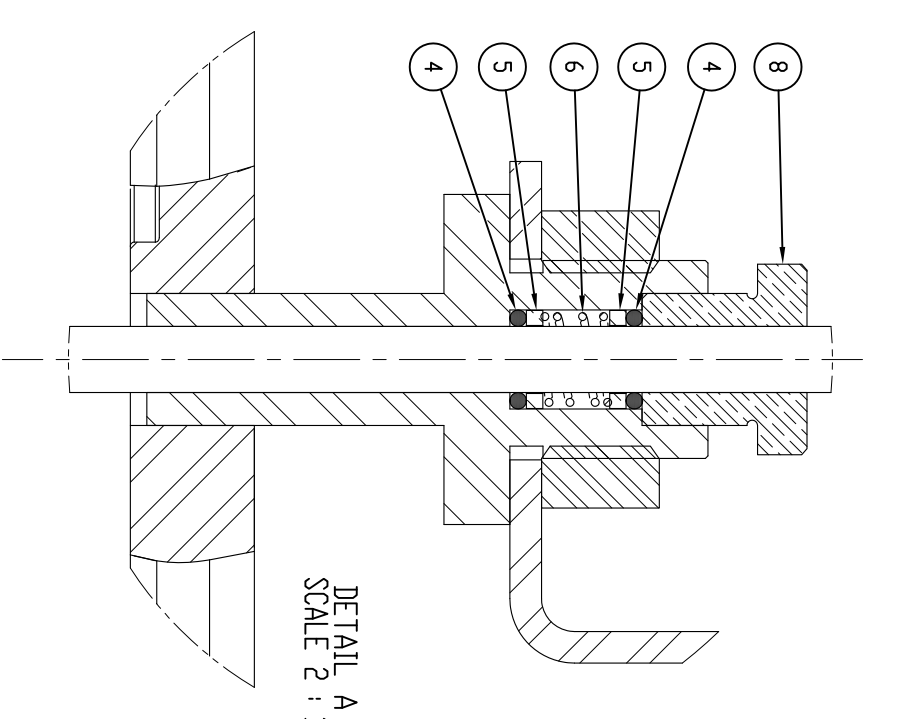
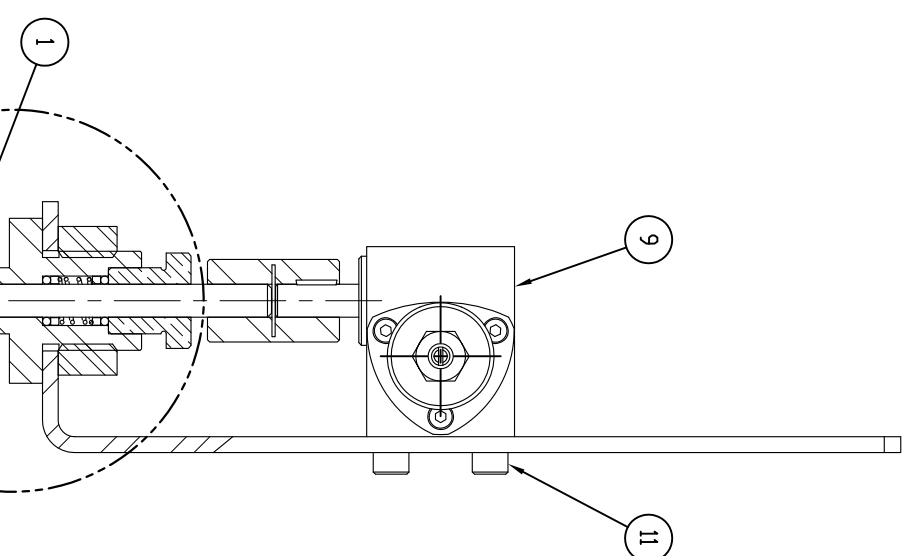
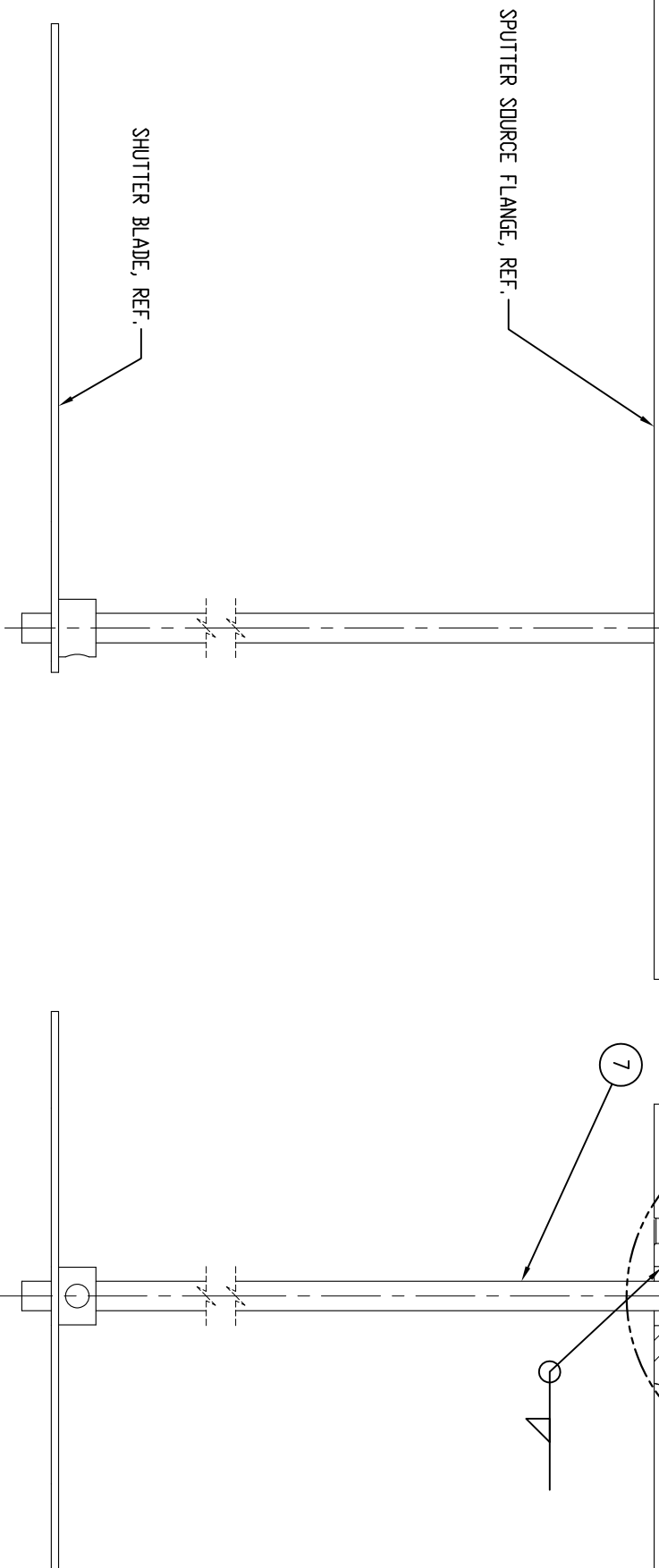
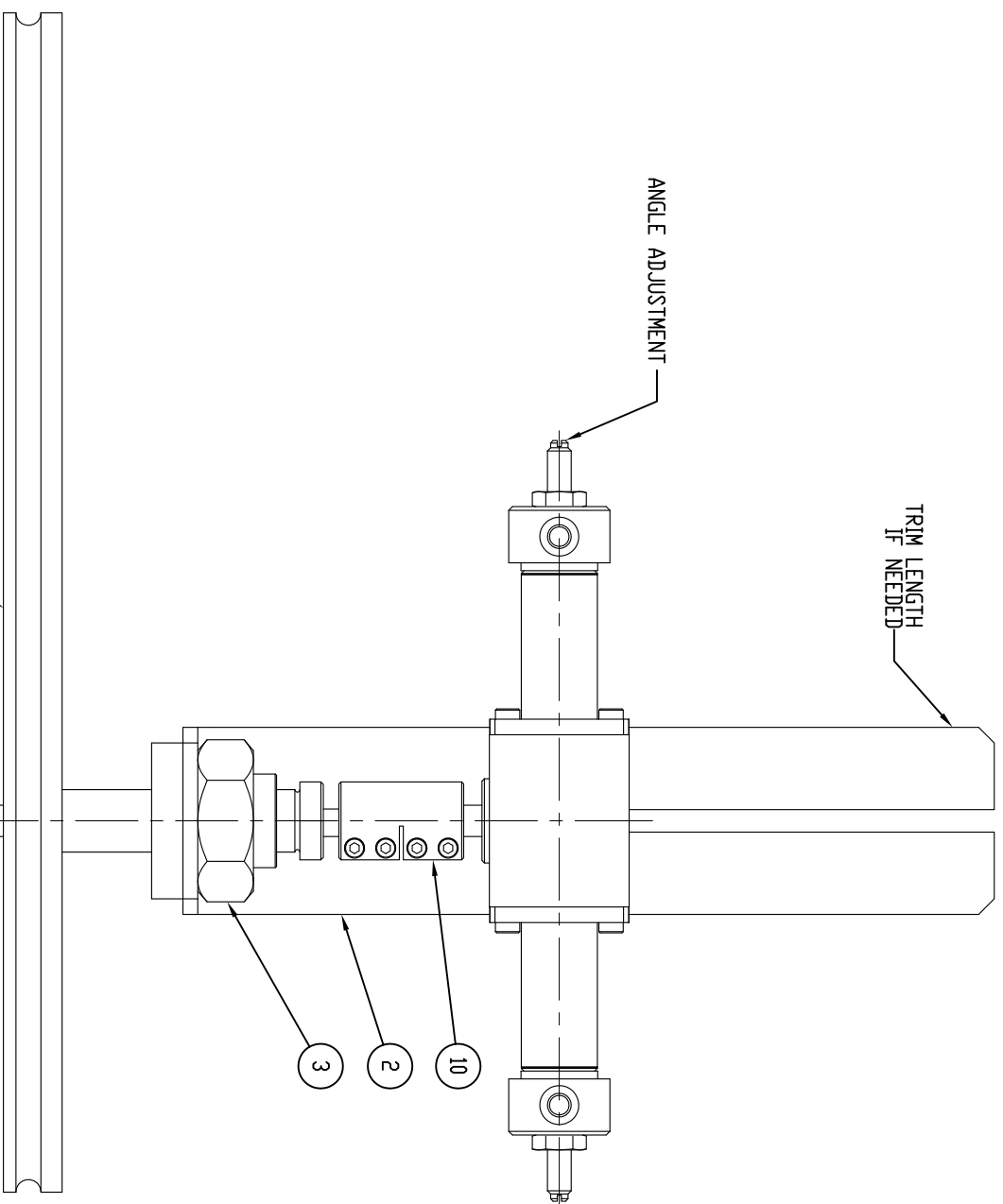
SHUTTER ASS'Y
(Ø4.00 SPUTTER SOURCE)

(FILE: 0084-020-210)
(CLC P/N: SRC005-0231)

C-0084-020-210 REV -

PROJ SCALE NTS SHEET

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	02/26/13	BES



DETAIL A
SCALE 2 : 1

PART #	QTY	DESCRIPTION	DWG/PART #	ITEM
HDW002-0077	2	SCREW-SOCKET HD CAP SS 8-32 X .38 LG.	-	11
BRG019-0042	1	COUPLING - SPLIT, 25° BORE, 63° OD X 1.00" LONG	CLX-4-4-SS	10
CYL001-0087	1	CYLINDER - ROTARY, 135 DEG, 25° SHFT, 9/16" BORE	PT-006135-A1B1	9
DWG001-0114	1	NUT - SHUTTER DRIVE SEAL	A-0100-055-126	8
SFT001-0097	1	SHAFT - .250 DIA	A-8011-002-07	7
SPR001-0039	1	SPRING-COMPRESSION SS	LEE LC-032E-1-SS	6
RT001-0046	2	SPACER-ROTARY MOTION (SMALL .067)	A-0141-001-034-2	5
DRG004-0003	2	GRIND-VITON .25" ID X .070" C.S.	-010	4
HDW011-0017	1	NUT-HEX, SS .75-10 THD	-	3
BRK002-0661	1	BRACKET - SHUTTER DRIVE, ROTARY CYLINDER, SPUTTER SOURCE	B-0084-020-276-01	2
BD0001-0026	1	BODY-25 ROTARY MOTION	A-0084-020-133	1

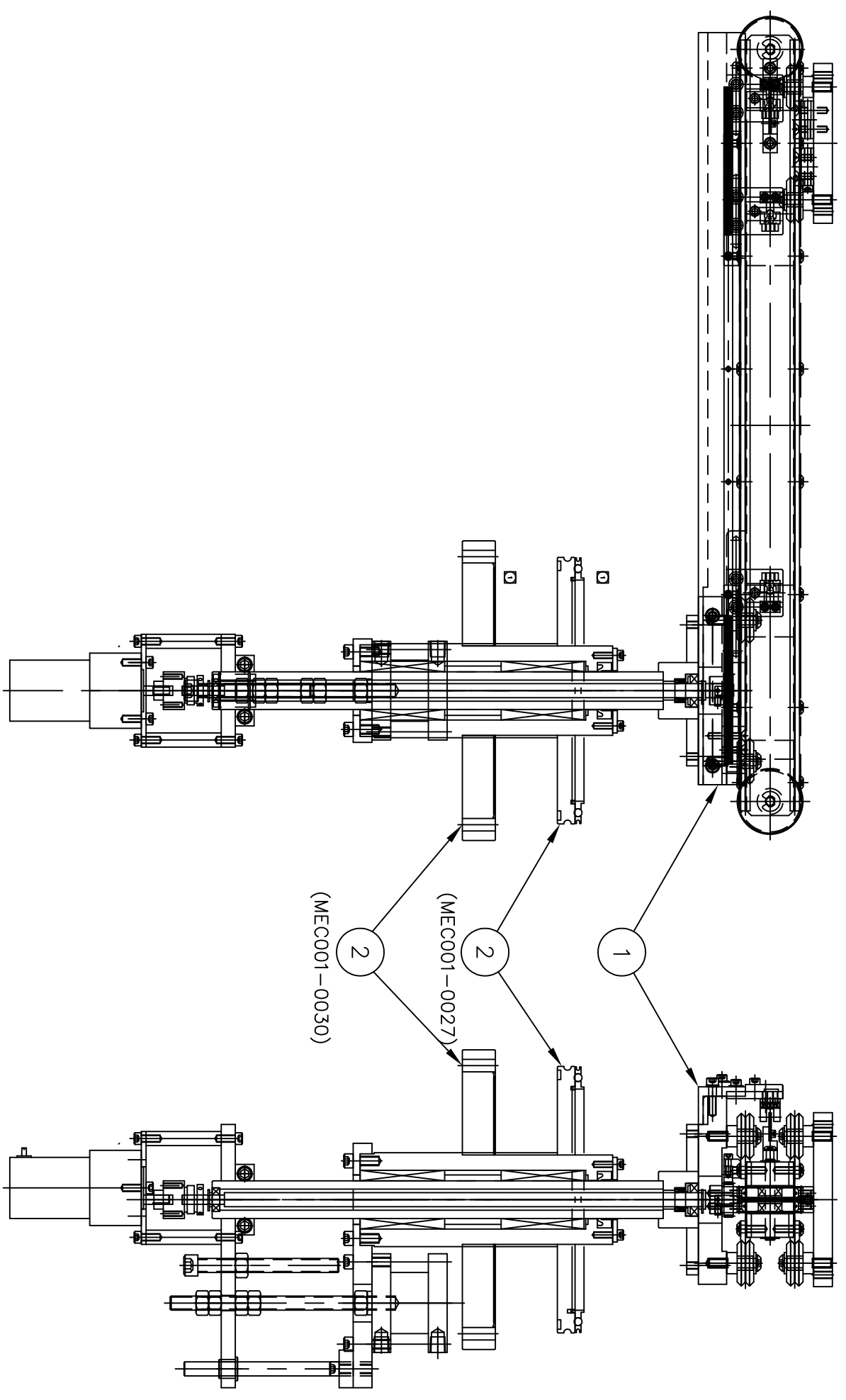
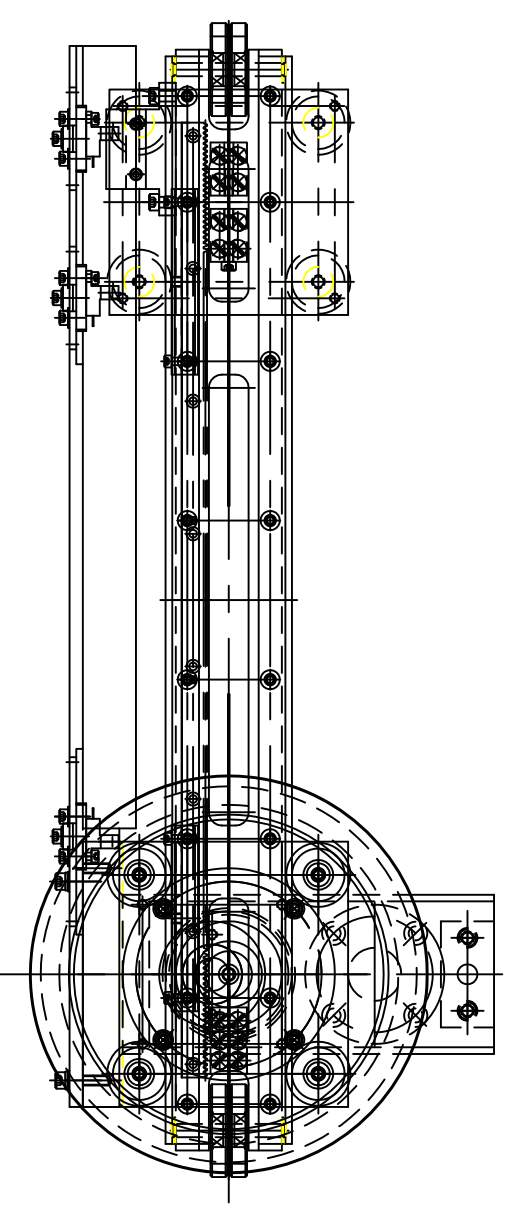
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DENTON VACUUM

SHUTTER DRIVE ASSEMBLY
- SPUTTER SOURCE,
ROTARY CYLINDER

FILE: 0084-020-275	C-0084-020-275	REV A
PART#: SRC005-0366	SCALE 1:1	SHEET 1 OF 1

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	ADDED -02	4/21/08	AM



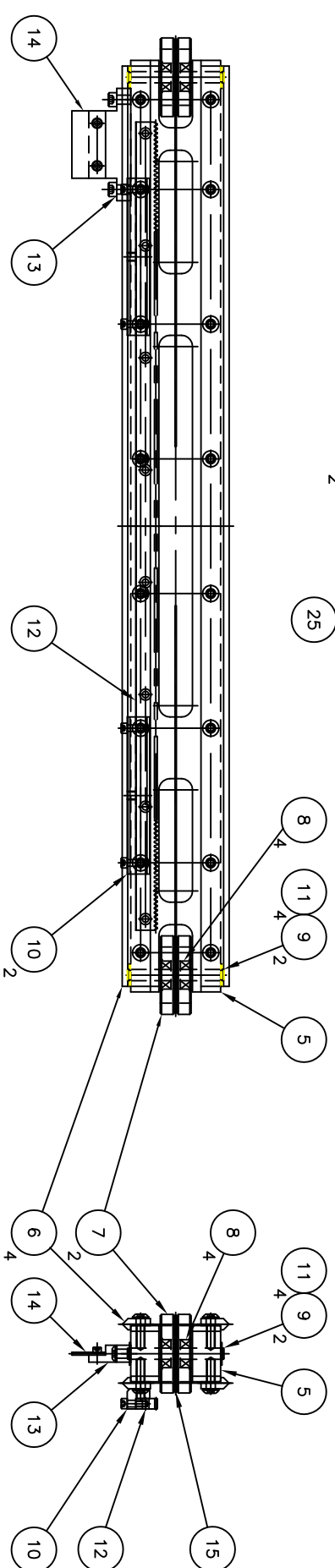
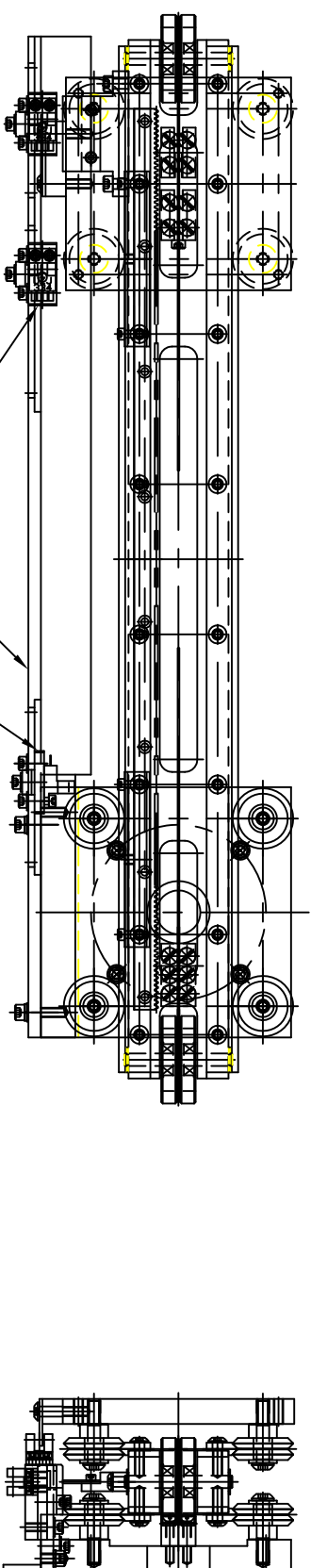
DASH NO.	ASSY' CLC P/N	ITEM# 2 CLC P/N	DWG/PART NO
-01	MEC001-0027	DRV001-0062	B-0084-064-017-01
-02	MEC001-0030	DRV001-0063	B-0084-064-017-02

SEE TABLE	1	ASSY, DRIVE, STD TRANSFER ROBOT	SEE TABLE	2
SLD001-0048	1	ASSY, SLIDE, STD TRANSFER ROBOT	B-0084-084-016	1
CLC P/N	QTY	DESCRIPTION	DWG/PART NO	ITEM
<small>THESE DIMENSIONS AND SPECIFICATIONS ARE THE PROPERTY OF DENTON VACUUM INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS WITHOUT PERMISSION.</small>				
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED		DRAWN	DATE	
BASIC DIMENSION		AM	3/03/08	
UP TO 6	±.02	CHECKED		
ABOVE 6 TO 24	±.03	DATE		
ABOVE 24	±.06	APPD.		
ANGULAR DIMENSIONS ± 1/2°	±.015			
ALL SURFACES TO BE FINISHED UNLESS OTHERWISE SPECIFIED.				
0084-064-014		ASSY, TRANSFER ROBOT, STANDARD POSITIONNER		
SEE TABLE F / CLC NOS.		REV	A	
PROJ	SCALE	SHEET	1/1	

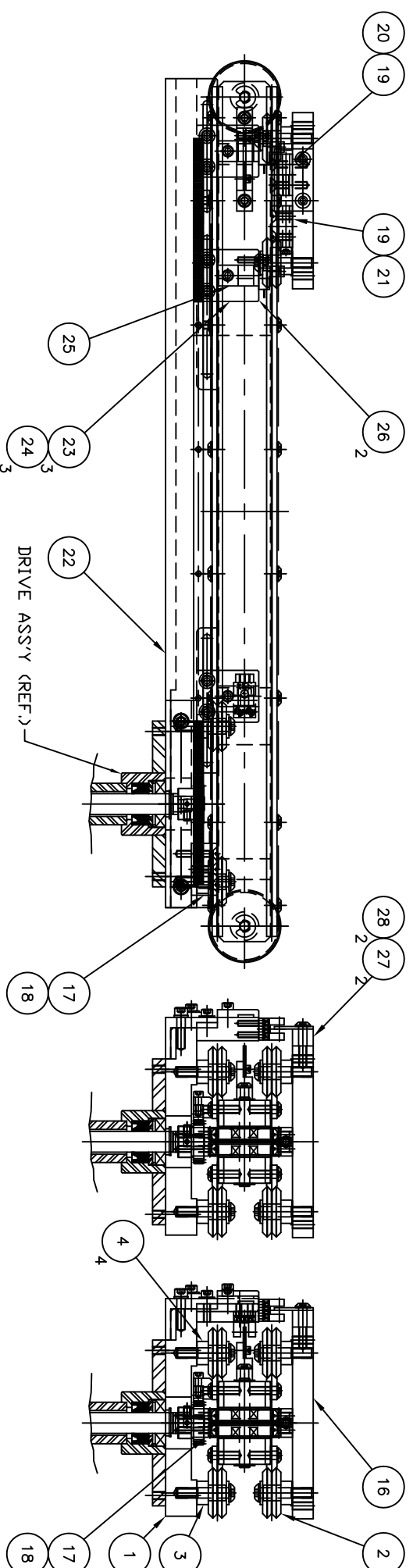


NOTES:
 PROTECT ALL SEALING SURFACES FROM DAMAGE.

SYM	REVISION DESCRIPTION	SYM	APPROVED
A	1. ITEM 23 WAS 3 ea. 2. ADDED IT'S 26, 27, 28	8/11/08	AM
B	1. TAB. DWGS. IT'S. 26, 27, 28 2. IT. #15 WAS WIT005-0014	11/12/08	AM
C	CHANGED TO METRIC HARDWARE	2/14/13	STEVE G.
D	ITEM 22 WAS BRK002-0443	12/23/15	JULES A



SHUTTLE RAIL ASS'Y



QTY	DESCRIPTION	DWG/PART NO	ITEM
20	SCREW, SHC, ST. STL, M6-1MM X 20MM LG.	-	36
20	SCREW, SHC, ST. STL, M6-1MM X 12MM LG.	-	35
16	SCREW, SHC, ST. STL, M3-0.5MM X 8MM LG.	-	34
12	SCREW, SHC, ST. STL, M4-0.7MM X 14MM LG.	-	33
12	SCREW, SHC, ST. STL, M4-0.7MM X 10MM LG.	-	32
8	SCREW, SHC, ST. STL, M5-0.8MM X 18MM LG.	-	31
8	SCREW, SHC, ST. STL, M5-0.8MM X 10MM LG.	-	30
10	SCREW, SHC, ST. STL, M5-0.8MM X 12MM LG.	-	29
1	FLAG, PHOTO-SENSOR, TOP SLIDE	A-0084-064-214-01	28
1	BLOCK, SENSOR FLAG MOUNT, TOP SLIDE	A-0084-064-213-01	27
2	BLOCK, MOUNTING, OPTICAL SENSOR	A-0084-064-215-01	26
3	TAB, SENSOR WIRE CLAMPING	A-0100-110-183	25
3	SENSOR, PHOTOELECTRIC, PNP, SLOT TYPE	SUNX PMY54P	24
3	BRACKET, MOUNTING, OPTICAL SENSOR	A-0100-110-172-01	23
1	BAR, MOUNTING, OPTO-SENSORS, SHUTTLE POSITION	B-0084-064-348	22
1	CLP001-0142	A-0084-064-171	21
1	CLP001-0141	A-0084-064-170	20
2	PLATE, WIRE CLAMPING, UPPER	A-0084-064-169	19
1	PLATE, WIRE CLAMP, BOTTOM	A-0084-064-187	18
1	PLATE, CARRIAGE, TRANSEER	B-0084-064-182	16
1	AIRCRAFT CABLE, SS 304, 3/64" DIA., 1 X 19 STR.	Melostar 3461175	15
1	FLAG, OPTO-SENSOR ACTUATING	A-0100-110-171-01	14
1	BRACKET, MOUNTING, OPTO-SENSOR FLAG	A-0084-064-189	13
1	GEAR, 32P, MODIFIED	B-0084-064-183	12
4	RING, RETAINING, EXTERNAL, .25", ST. STL	TRIARC 5100-25	11
2	ANGLE, MOUNTING, GEAR RACK	A-0084-064-184	10
2	SHAFT, SYNCHRO PULLEY	A-0084-064-185	9
4	BEARING, BALL, FLG, OPEN, .25" ID X .63" OD X .24 W	NM BEHG B2-7-03	8
2	PULLEY, CARRIAGE SYNCHRONIZING	A-0100-110-164	7
4	TRACK, DUAL-VEE, ST. STL, SIZE 2	B-0100-110-181	6
1	RAIL, SHUTTLE	B-0084-064-181	5
4	BUSHING, EXCENTRIC, WHEEL SUPPORT	DUAL VEE B2-SS	4
4	BUSHING, CONCENTRIC, WHEEL SUPPORT	DUAL VEE B2-SS	3
8	WHEEL, GUIDE, DUAL-VEE, ST. STL, SIZE 2	DUAL VEE WSSX	2
1	PLATE, BASE, FIXED	B-0084-064-180	1

THESE DIMENSIONS AND SPECIFICATIONS ARE THE PROPERTY OF DENTON VACUUM AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS WITHOUT PERMISSION.

DENTON VACUUM

TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED	DRAWN	DATE
BASIC DIMENSION	AM	3/03/08
±.02	CHECKED	DATE
±.03	DATE	DATE
±.015	APPD.	DATE

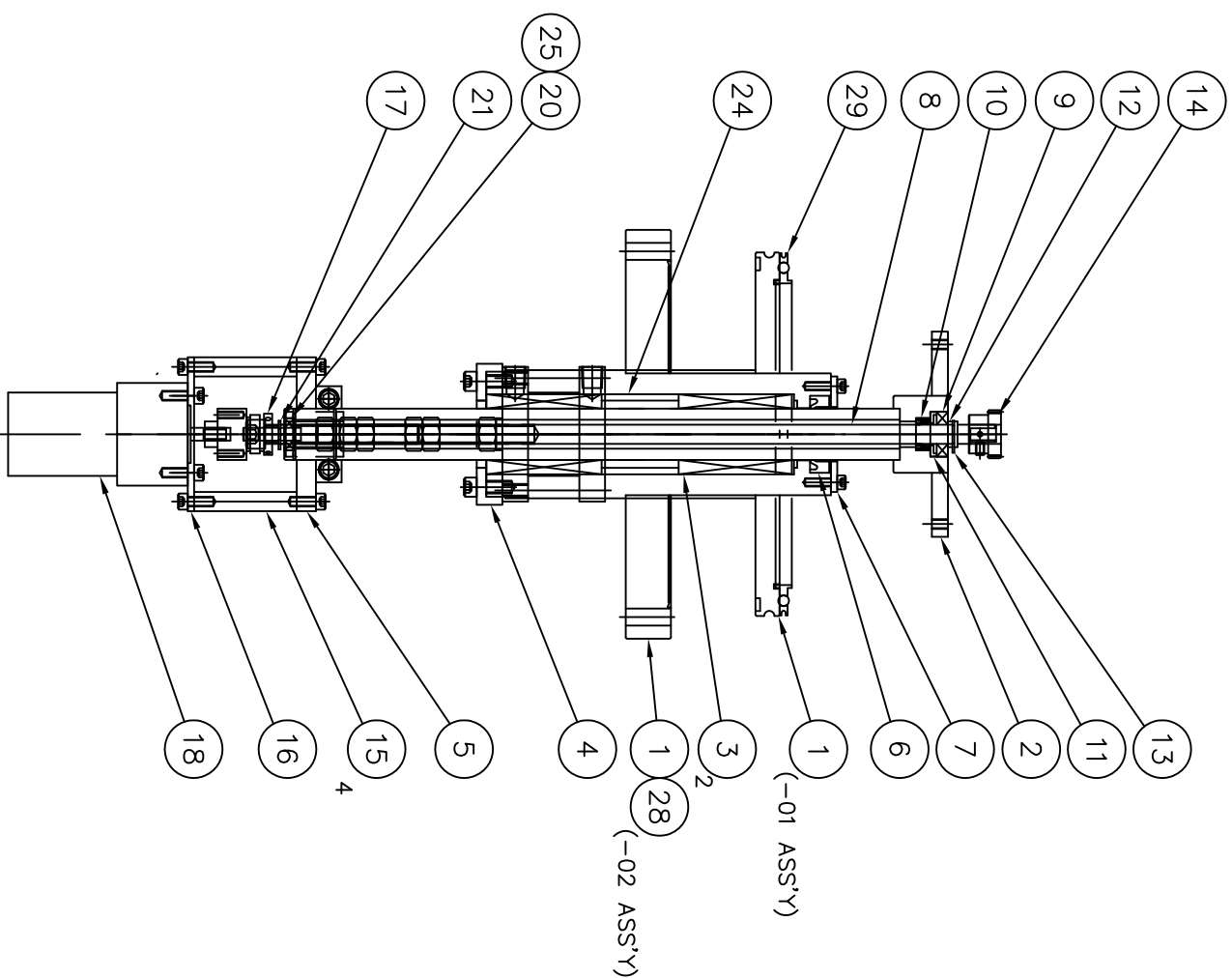
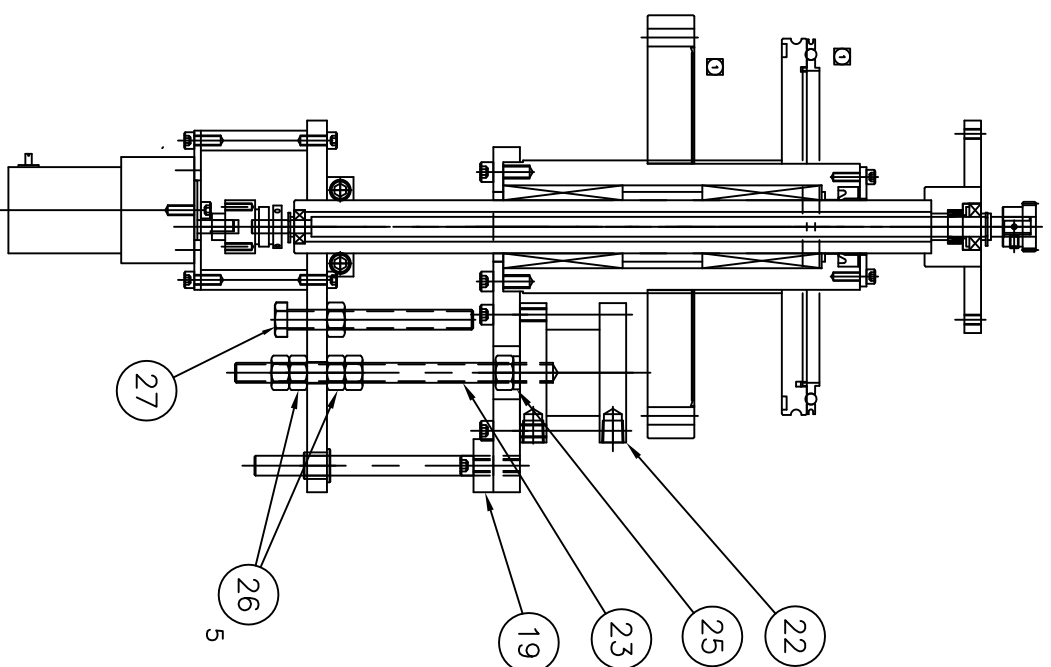
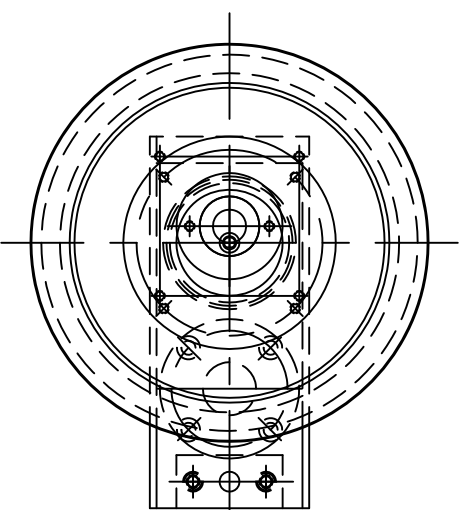
ASS'Y, SLIDE, STD TRANSFER LOAD LOCK ROBOT

ALL SURFACES TO BE FINISHED UNLESS OTHERWISE SPECIFIED.

0084-064-016 REV D

SLD001-0048 SCALE 1/1 SHEET 1/1

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	ADDED -02 CONFIGURATION	4/21/08	AM
B	ITEM 27 WAS HDW002-0212 SOCKET HEAD SCREW	11/17/08	BES
C	CHANGED -01 ASSEMBLY TO METRIC HARDWARE	2/14/13	STEVE G.



DASH NO.	ASSY CLC P/N	ITEM# CLC P/N	DWG/PART NO	ITEM# 29 CLC P/N	DESCRIPTION
-01	DRV001-0062	FED001-0150	B-0084-064-018	WFT002-0078	CENTERING RING, ISO NW160
-02	DRV001-0063	FED001-0152	B-0084-064-020	GSK002-0009	GASKET, OPHC COPPER, CF 8.00 FLG

SEE TABLE	QTY	DESCRIPTION	DWG/PART NO	ITEM
HDW001-0134	1	ISO 160 CENTERING RING OR B.O COPPER GASKET		28
HDW001-0101	6	SCREW-HEX HEAD, SS, M10-1.5MM X 90MM LG.	McMaster 91287A380	27
SPC001-0246	1	NUT-HEX M10-1.5MM THD.	McMaster 91828A415	26
SPC001-0245	1	SPACER, .280" ID X .375" OD X .063" L/G	A-0100-125-219-07	25
HDW006-0057	1	SPACER, 1.550" OD X 1.25" ID X 1.48" L/G	A-0100-125-219-06	24
CYL001-0074	1	ROD, THREADED, M10-1.5MM X 2METER LD.	94185A220	23
BRG003-0014	1	AIR CYLINDER, LOW PROFILE, 1.50" BORE X 1.00" STROKE	PARKER 1.50NLP9X1.00	22
BRG003-0096	1	BEARING, BALL, SS, OPEN, .250" ID X .625" OD X .204" W	TRUARC 5100-25	21
SFT001-0475	1	BEARING, BALL, SS, OPEN, .375" ID X .875" OD X .219" W	McMaster 6136K13	20
MTR002-0028	1	GEAR, MOTOR, 82 RPM, 24 VDC, 10.94 In-lbs	McMaster 6331K33	19
CLU001-0012	1	GEAR-TO-SHAFT, 1/4" X 1/4" BORE	WM BERG JCO-3	17
PLT002-0367	1	COUPLING, SLIP, SHAFT, 1/4" X 1/4" BORE	A-0084-064-194	16
STD003-0181	4	PLATE, MOTOR MOUNT	A-0084-064-196	15
GEA004-0023	1	STANDOFF, MOTOR MOUNT	A-0084-064-196	15
RNG003-0019	1	GEAR, 32 P, .875" PD, 28 T, 3/8" B, 3/8" F, SS 303	WM BERG P32S34-28	14
SPC001-0214	1	RING, RETAINING, EXTERNAL, .375" DIA.	TRUARC 5100-37	13
SPC001-0244	1	SPACER, .385" ID X .500" OD X .0625" L/G	A-0100-125-219-01	12
ORG005-0006	1	WASHER, U-CUP SEAL/BEARING SPACING	A-0084-064-195	11
BRG003-0084	1	SEAL, U-CUP, .375" ID X .625" OD X .25" L	DISOGRN 005-022000A	10
SFT001-0476	1	BEARING, BALL, SS, OPEN, .375" ID X .875" OD X .219" W	McMaster 6136K14	9
CAP002-0059	1	SHAFT, INNER	B-0084-064-191	8
ORG005-0019	1	CAP, U-CUP SEAL	A-0084-064-197	7
PLT002-0366	1	SEAL, U-CUP 1.00" ID X 1.50" OD X .38" L/G	DISOGRN 005-0110	6
PLT002-0365	1	PLATE, ATTACHMENT, LFT/GUIDE	B-0084-064-193	5
BRG015-0005	2	PLATE, MOUNTING, LFT/GUIDE	B-0084-064-192	4
SFT001-0474	1	BUSHING, LINEAR BALL, 1.000" ID X 1.562" OD	McMaster 80395K76	3
SEE TABLE	1	ASSY, SHAFT, OUTER	B-0084-064-019	2
SEE TABLE	1	ASSY, BODY, FEEDTHROUGH	SEE TABLE	1

THESE DIMENSIONS AND SPECIFICATIONS ARE THE PROPERTY OF DENTON VACUUM AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS WITHOUT PERMISSION.

TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED	DRAWN	DATE
BASIC DIMENSION	AM	2/20/020
2 PLACE DIMENSION	CHECKED	DATE
3 PLACE DIMENSION	DATE	DATE
UP TO 6 ±.02	DATE	DATE
6 TO 24 ±.03	DATE	DATE
ABOVE 24 ±.08	DATE	DATE
ANGULAR DIMENSIONS ± 1/2°	DATE	DATE

ALL SURFACES TO BE FINISHED UNLESS OTHERWISE SPECIFIED.

0084-064-017
SEE TABLE FOR CLC#

ASSY, DRIVE,
STD VACUUM LINEAR
POSITIONNER

B-0084-064-017
SCALE 1/1

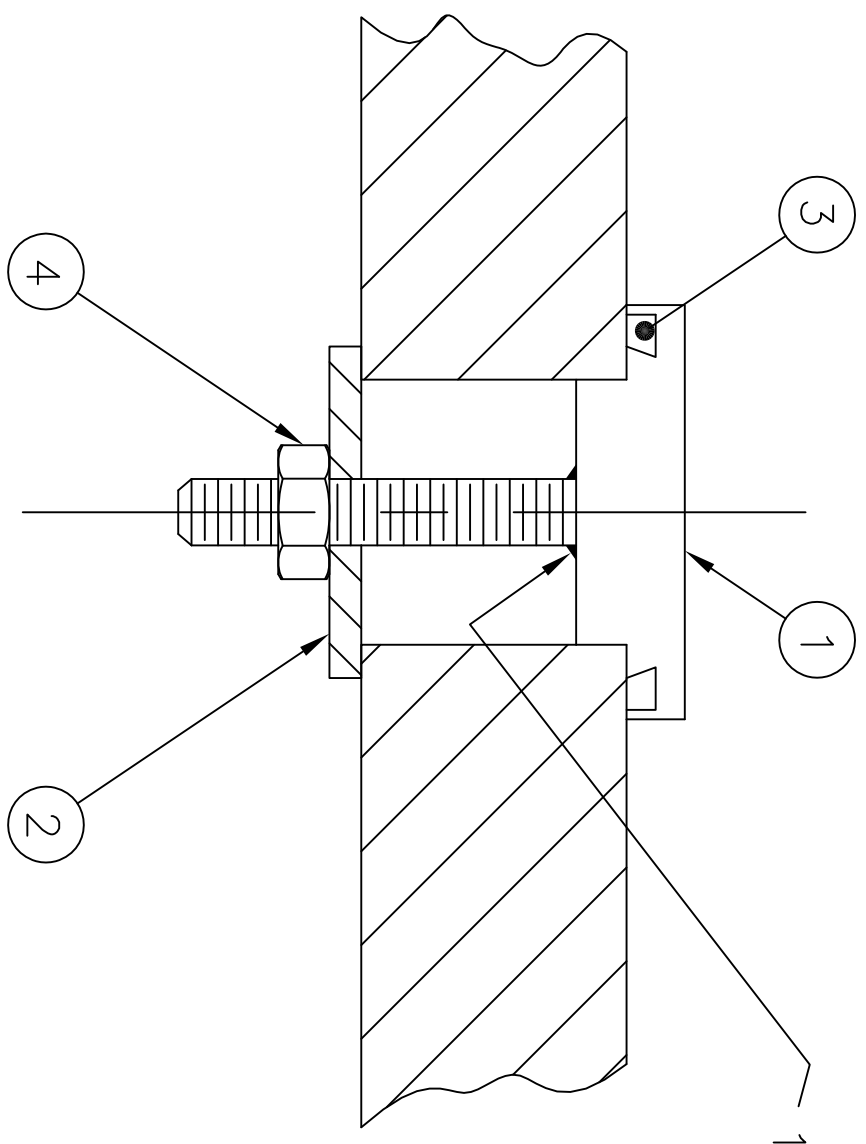
REV C



NOTES:
PROTECT ALL SEALING SURFACES FROM DAMAGE.

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	ADDED CLC P/N & RENUM.	1/17/00	HCD

VACUUM SIDE



1/8" OR 3/16" FILLET WELD ALL AROUND

QTY	DESCRIPTION	DWG/PART NO	DWG/PART NO	ITEM
1	HEX NUT S/S	.25-20 THD	NFH025CSS	4
1	ORING-BUNA 270	ORG001-0048	5013-213	3
1	WASHER-BLANK PLUG 1"	DWG001-0099	A-0100-025-167	2
1	FEEDTHRU-1" BLANK	FED001-0016	A-0092-003-039	1

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TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED			DRAWN	DATE
BASIC DIMENSION	2 PLACE DECIMALS	3 PLACE DECIMALS	<i>Hdiem</i>	1/21/00
UP TO 6	±.02	±.005	CHECKED	DATE
ABOVE 6 TO 24	±.03	±.010	APPD.	DATE
ABOVE 24	±.06	±.015		

ANGULAR DIMENSIONS ± 1/2°

ALL SURFACES TO BE ^{3ST} UNLESS OTHERWISE SPECIFIED.

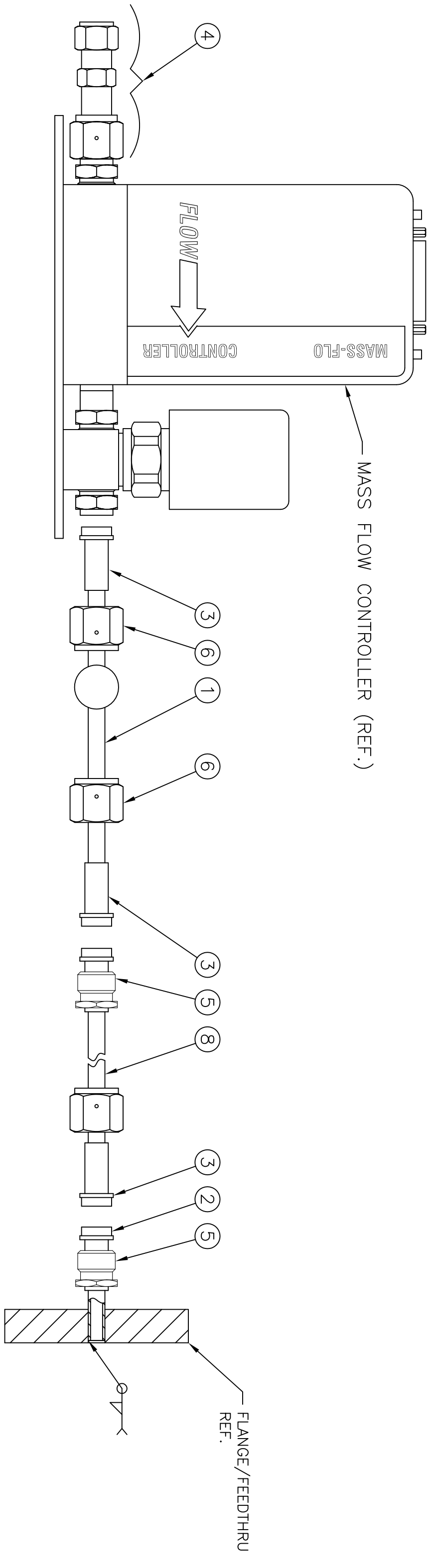
(FILE: 92003041)
CLC P/N: FED001-0010

DENTON
VACUUM
 INC
 MOORESTOWN, NJ

1.00" BLANK PLUG
 ASSEMBLY

PROJ	A-0092-003-041	SHEET	1	OF	1

SYM	REVISION	DESCRIPTION	DATE	APPROVED
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SIDE VIEW

CLC P/N	QTY	DESCRIPTION	DWG/PART NO	ITEM
SST001-0009	24"	TUBE-.304SS, .25 OD X .049W COILS	SST-.250DX.049W	8
FTG010-0003	10	GASKET-VCR NICKEL	NI-4-VCR-2-VS	7
FTG010-0011	6	NUT-FEMALE VCR 1/4	SS-4-VCR-1	6
FTG010-0035	6	NUT - SHORT MALE, 1/4" VCR	SS-4-VCR-4-.54NC	5
FTG001-0133	4	CONNECTOR-FEMALE VCR TO 1/4" TUBE	SS-4-WVCR-6-400	4
FTG010-0013	7	GLAND-SOCKET WELD VCR 1/4"	SS-4-VCR-3	3
FTG010-0038	1	GLAND - LONG TUBE, 1/4" VCR X BUTT WELD	6LV-4-VCR-3-4TB7	2
GAS001-0023	1	MANIFOLD ASS'Y.-GAS (4-GAS)	B-0098-001-043	1

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DENTON VACUUM

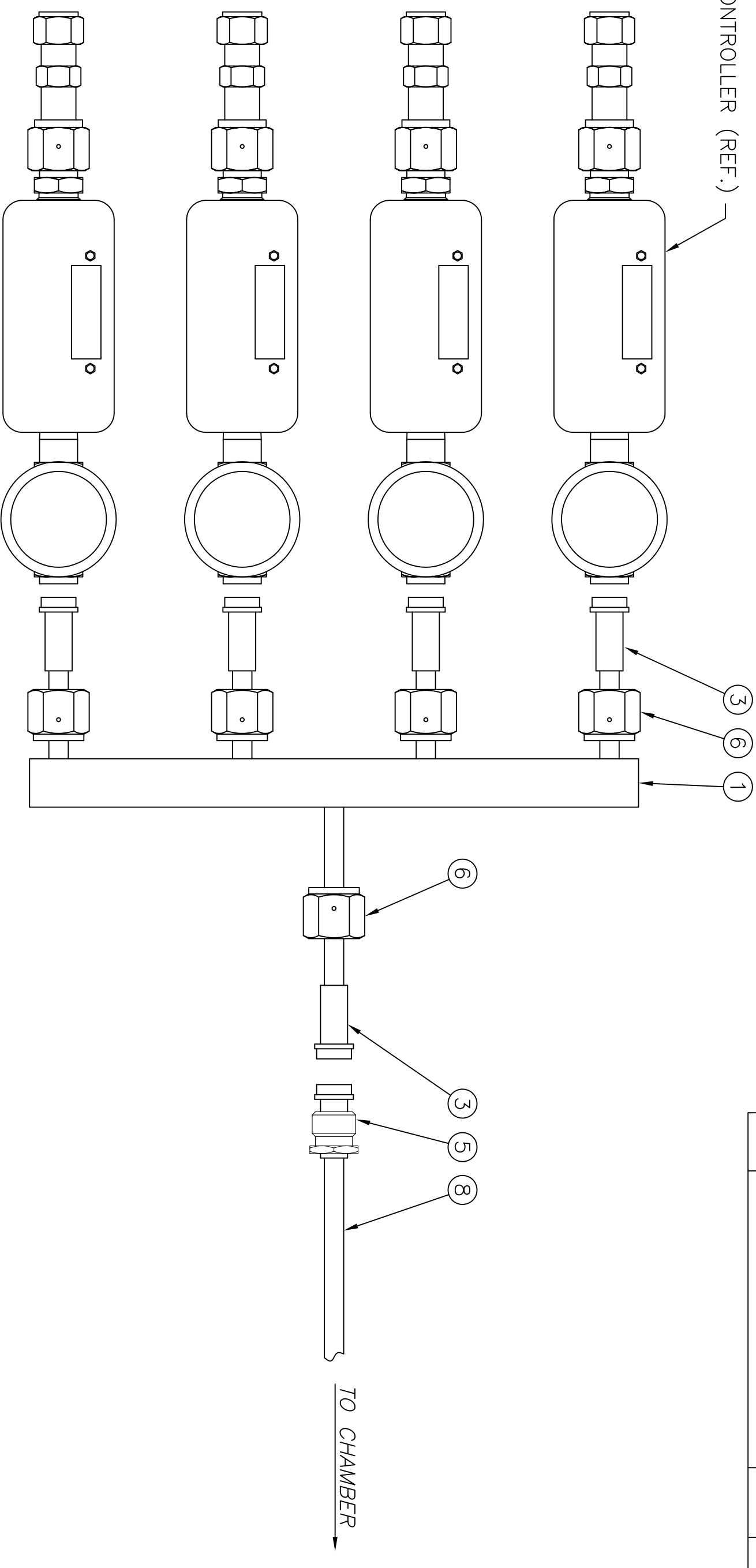
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED		DRAWN	DATE
BASIC DIMENSION	2 PLACE DECIMALS	BES	07/27/15
UP TO 6	±.02	CHECKED	DATE
ABOVE 6 TO 24	±.03	APPD.	DATE
ABOVE 24	±.06		
ANGULAR DIMENSIONS ± 1/2°			

ALL SURFACES TO BE ^{63ST} UNLESS OTHERWISE SPECIFIED.		PROJ	SCALE	SHEET
FILE: 8053-047SHT1	B-8053-047-SHT1		NTS	1/2
PART#: GAS001-0197	REV A			

PROCESS GAS ASSEMBLY
4-GAS INTD MANIFOLD
WITH VCR FITTINGS

SYM	REVISION DESCRIPTION	DATE	APPROVED
A	FOR RELEASE	DATE	BES

MASS FLOW CONTROLLER (REF.)



TOP VIEW

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DENTON VACUUM, LLC AND SHALL NOT BE REPRODUCED, COPIED, OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS WITHOUT PERMISSION.

TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED

BASIC DIMENSION	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.015

DRAWN BEES 07/27/15

CHECKED APPD. DATE

ANGULAR DIMENSIONS ± 1/2°

ALL SURFACES TO BE ^{63ST} UNLESS OTHERWISE SPECIFIED.

FILE: 8053-047SHT2
PART#: GAS001-0197

DENTON VACUUM

PROCESS GAS ASSEMBLY
4-GAS INTD MANIFOLD
WITH VCR FITTINGS

B-8053-047-SHT2

PROU SCALE NTS SHEET 2/2