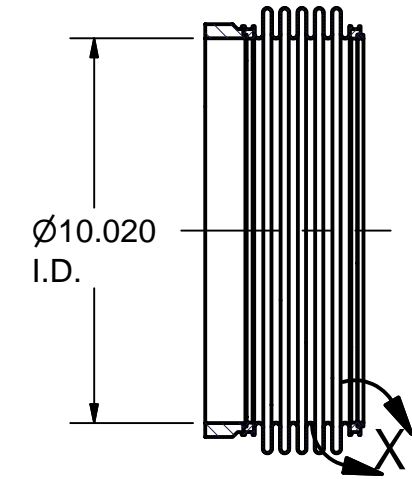
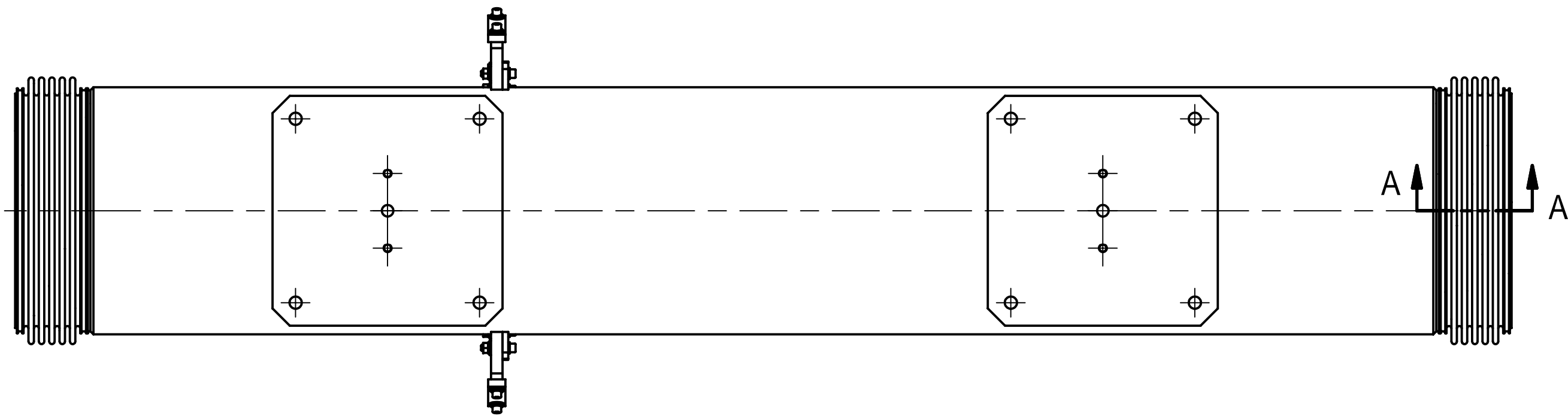
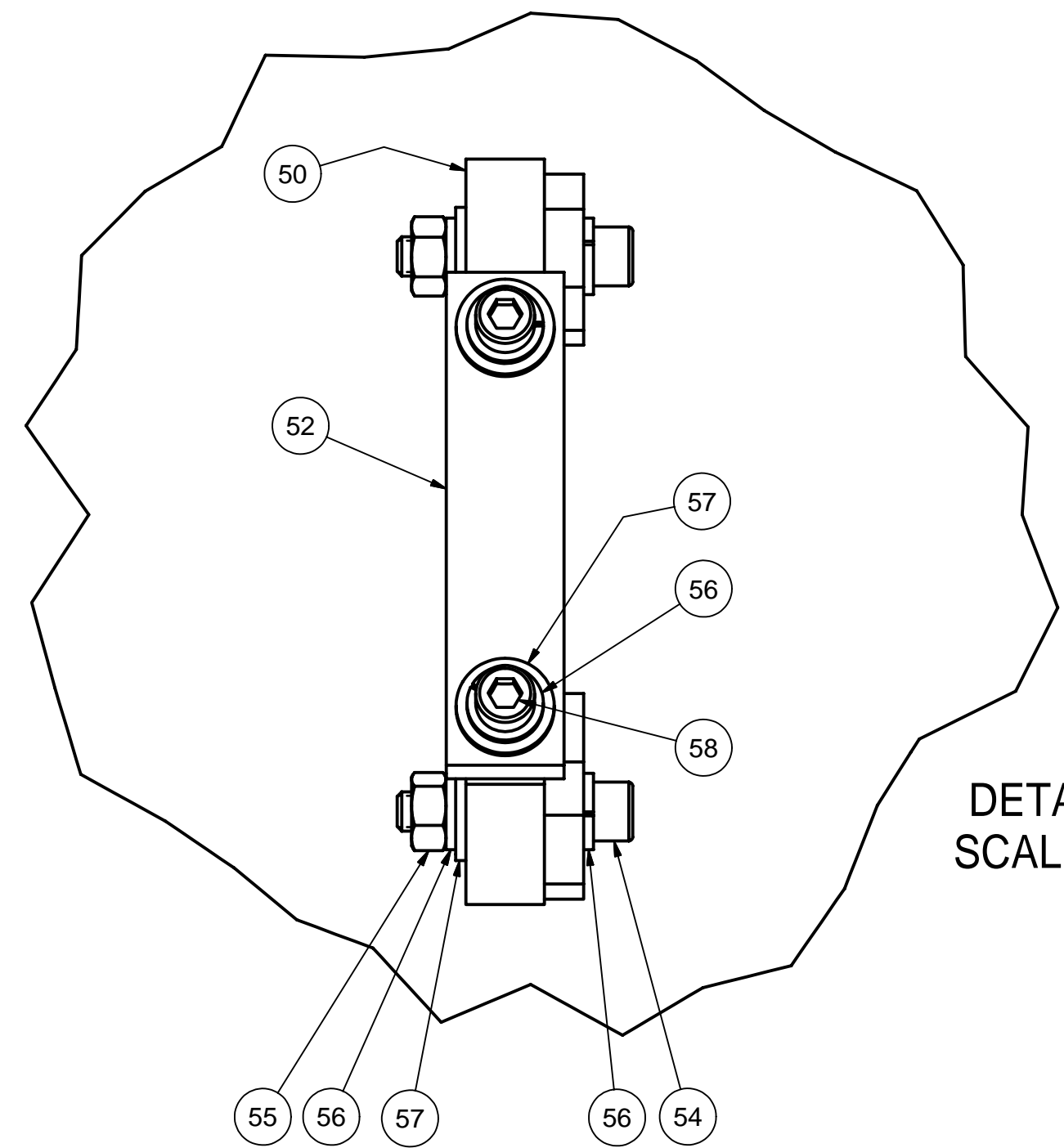
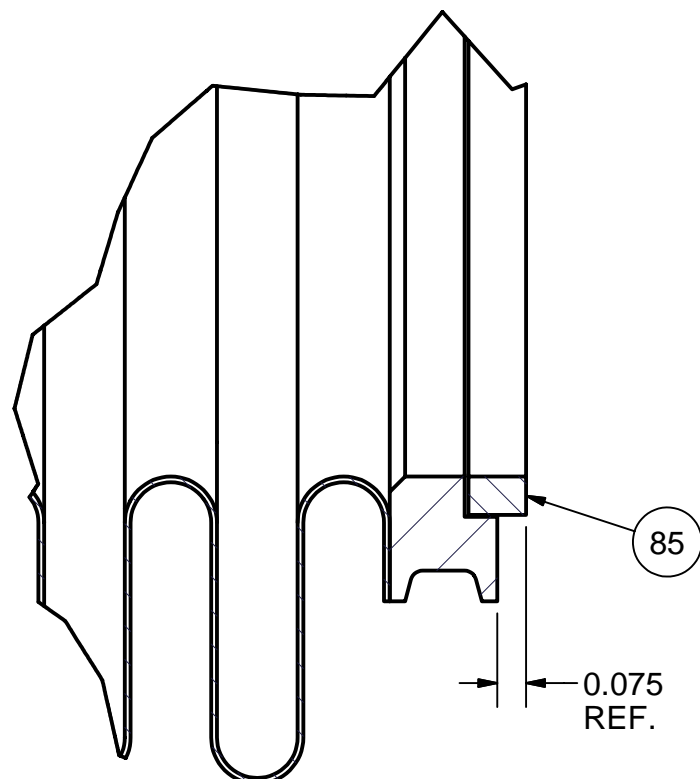


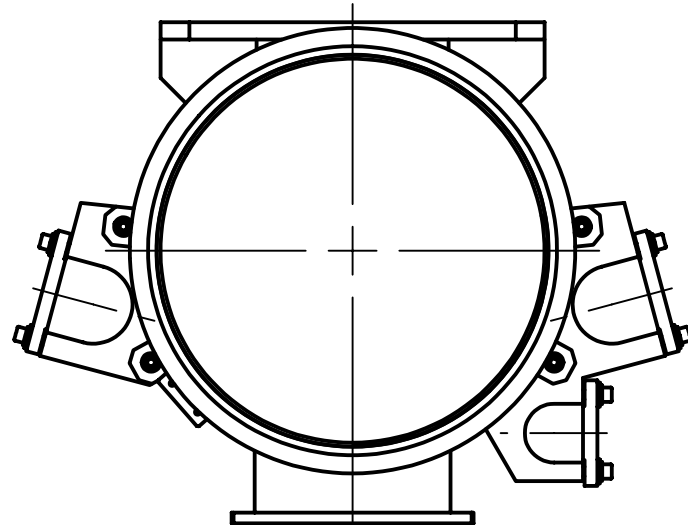
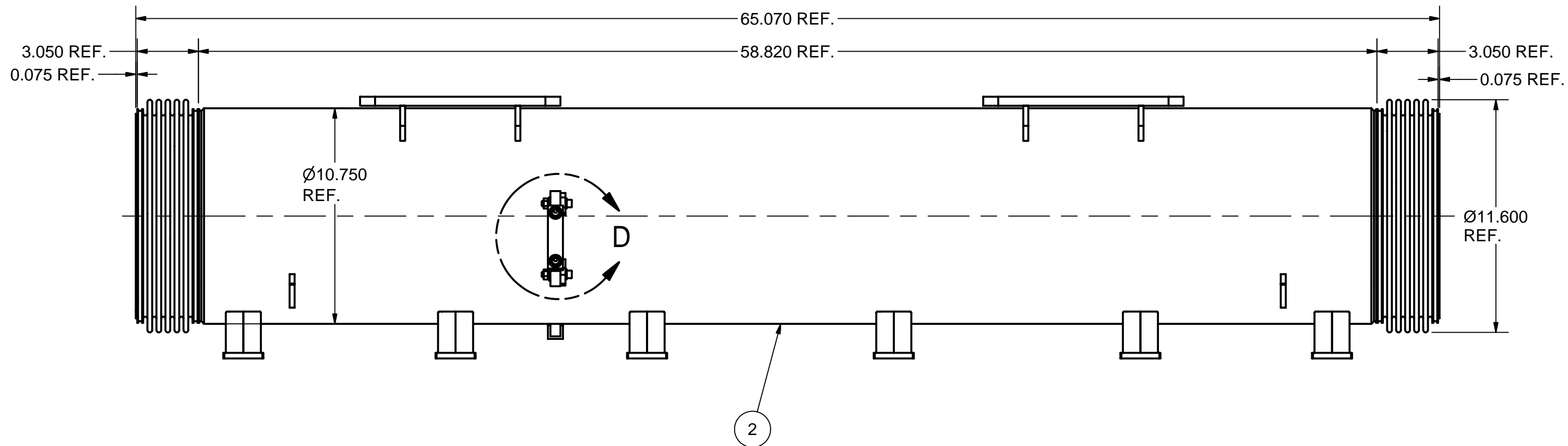
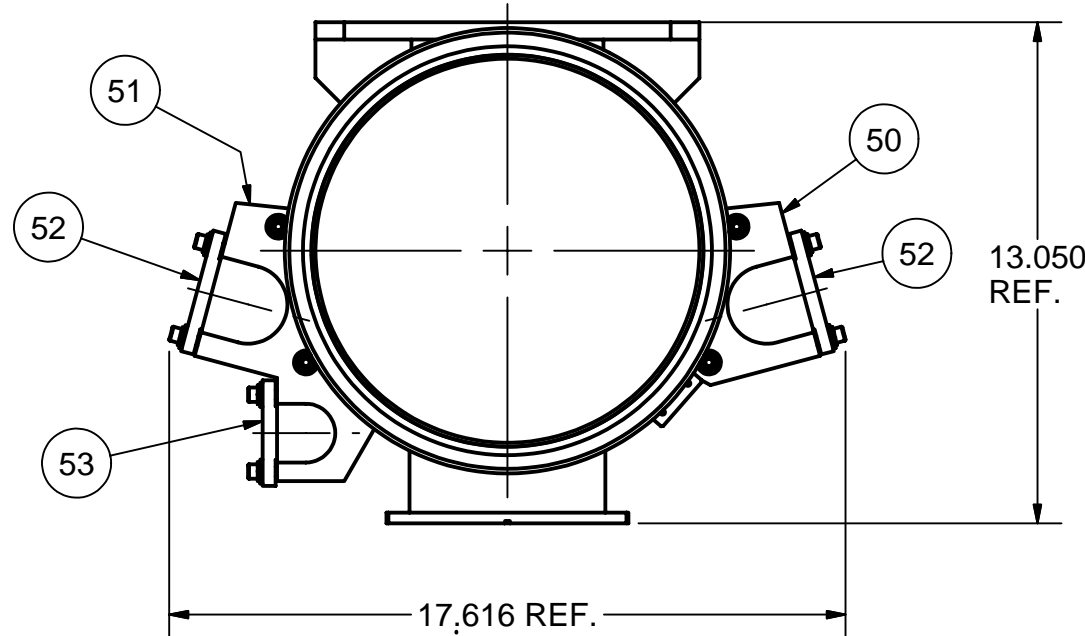
| REVISIONS | | | | |
|-----------|------|-------------|------|------|
| SYM. | ZONE | DESCRIPTION | DATE | APP. |



SECTION A-A

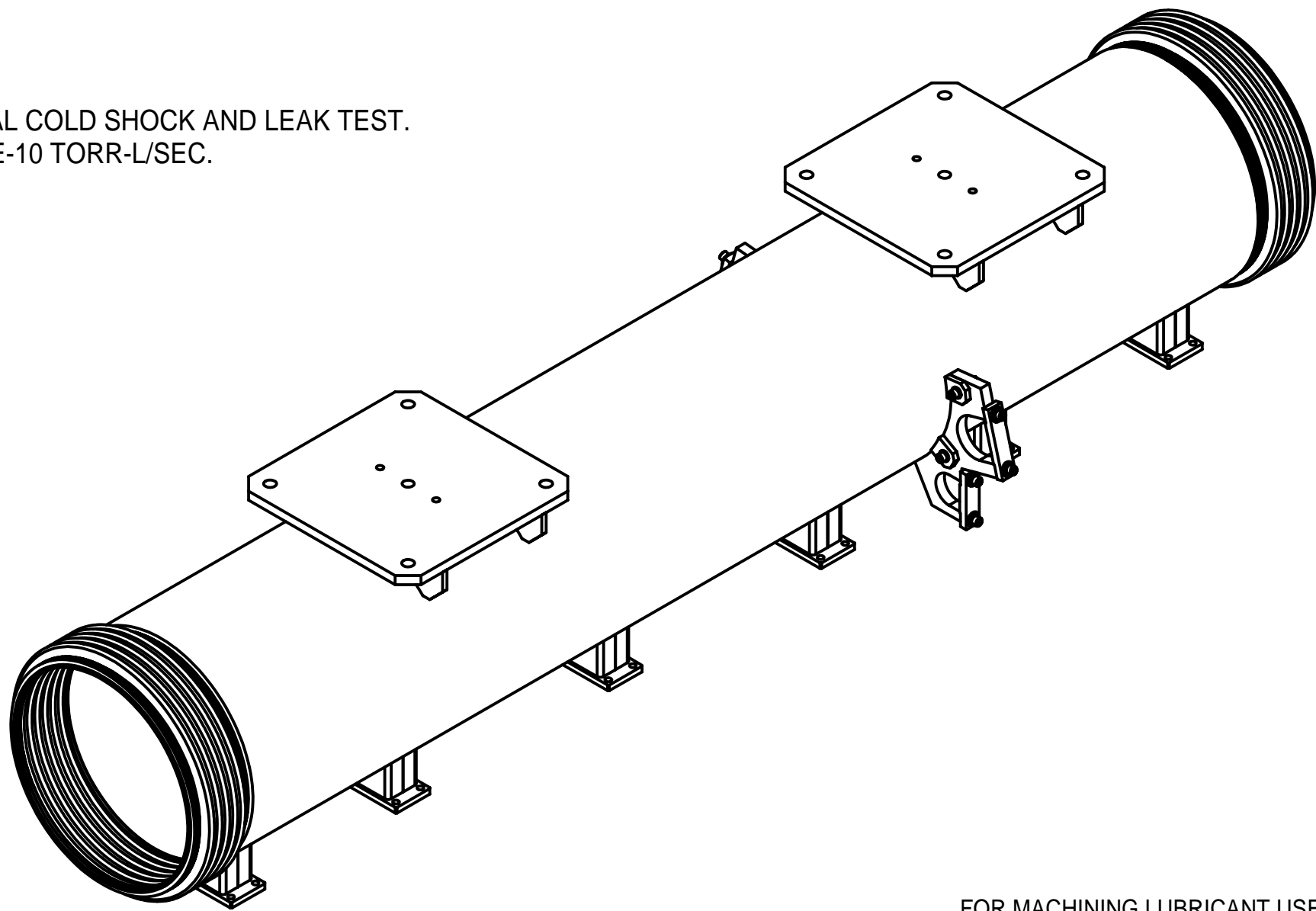
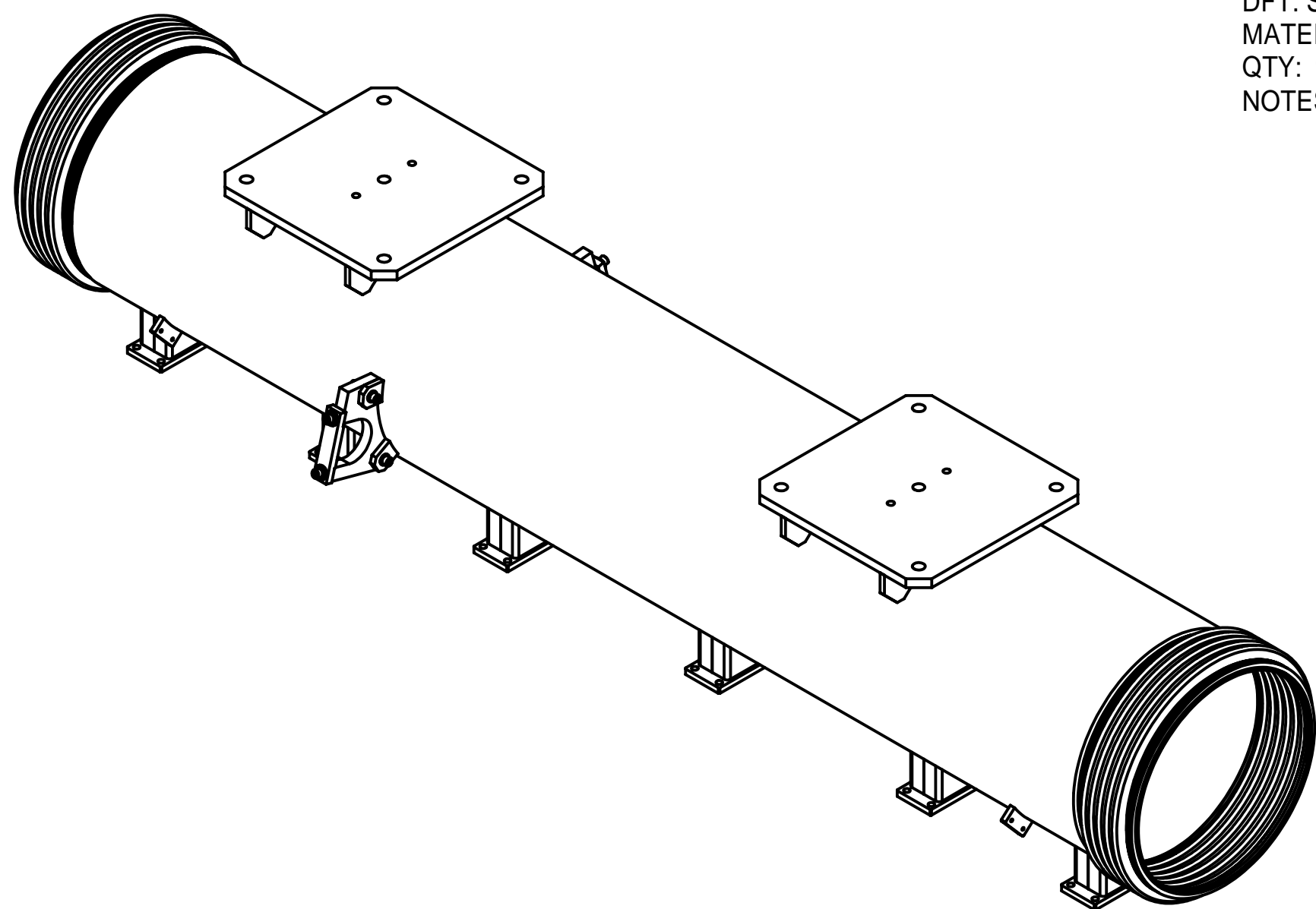


DETAIL X
SCALE 2 : 1



1 HELIUM GAS RETURN PIPE, MIDDLE SECTION (MS), ASSEMBLY



FILE NAME: 7102-051
SHEET NO.: 1
DFT. SCALE: 1:5
MATERIAL: AS NOTED
QTY: 1 REQ'D
NOTES: 1. MAKE LN THERMAL COLD SHOCK AND LEAK TEST.
LEAK RATE: < 2.0E-10 TORR-L/SEC.



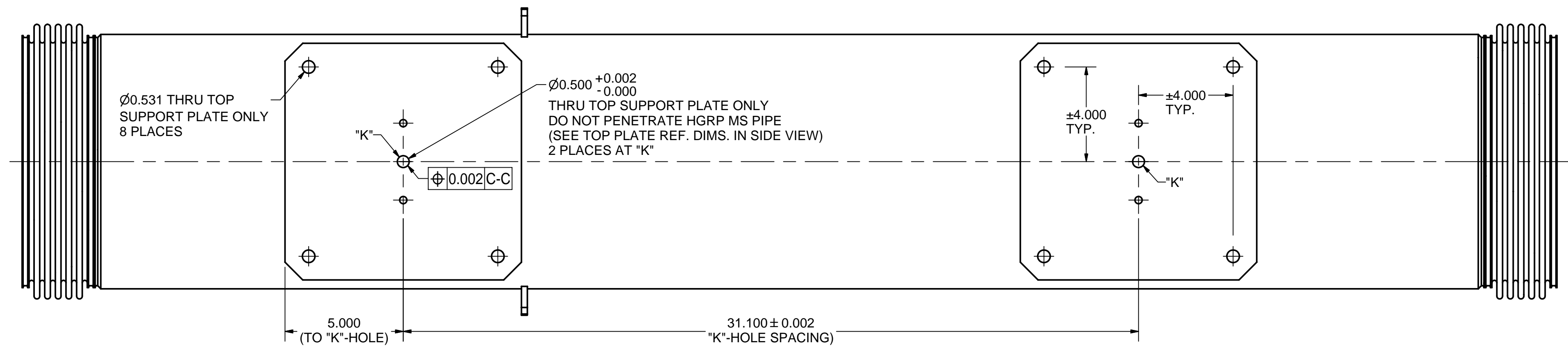
FOR MACHINING LUBRICANT USE ONLY
ALKALINE DETERGENT LUBRICANT CIMSTAR 40
OR EQUIVALENT APPROVED BY CORNELL LEPP

Release of final PO version for Meyer Tool - June 19, 2007.

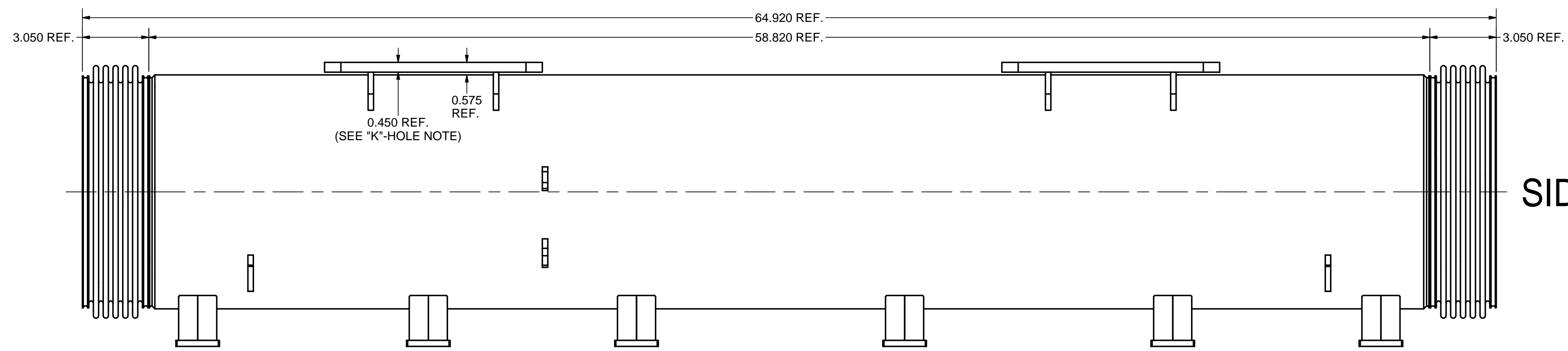
| | | | | | | | |
|----|-------------------|--|----|--|--|----------------|--|
| 85 | 7102-051 (SH. 4) | CENTER RING | 2 | | | | |
| 58 | - | 1/4-20 x 7/8 Sock. Head Cap Screw | 6 | | | 316 St. Steel | |
| 57 | - | 1/4 Washer | 10 | | | 316 St. Steel | |
| 56 | - | 1/4 Spring Lock Washer | 14 | | | 316 St. Steel | |
| 55 | - | 1/4-20 Hex Nut | 4 | | | Silicon Bronze | |
| 54 | - | 1/4-20 x 1-1/4 Socket Head Cap Screw | 4 | | | 316 St. Steel | |
| 53 | 7102-051 (SH. 4) | WARM-UP TUBE FIXED CLAMP | 1 | | | | |
| 52 | 7102-051 (SH. 4) | 5 K TUBE FIXED CLAMP | 2 | | | | |
| 51 | 7102-050 (SH. 13) | 5 K TUBE BRACKET RIGHT | 1 | | | | |
| 50 | 7102-050 (SH. 13) | 5 K TUBE BRACKET LEFT | 1 | | | | |
| 2 | 7102-051 (SH. 2) | HGRP MS WELDMENT II | 1 | | | | |
| 1 | 7102-051 (SH. 1) | HELIUM GAS RETURN PIPE, Middle Section (MS), ASM | X | | | | |

| | | | | | | | | | |
|---|-------------------|---|----------|--|--|-------|----|----------------|------|
|  | | ITEM | DWG. NO. | DESCRIPTION | G1 | G2 | G3 | REMARKS | REV. |
| | | | | | QUANTITY | | | | |
| D | PRINT DISTR. | PLOT DATE: 6/19/2007 CAD FILE NAME: 7102-051.idw | | | | | | | |
| | SH. NO. 1 OF 4 | 7102-051 | CR-1 | UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES  | CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY Ithaca, NY 14853 | | | | |
| ERL Injector Cryomodule Helium Gas Return Pipe, Middle Section Assembly | | | | | | | | | |
| REV. | | CHECKED BY: VM | DRAWN BY | DRAWN FOR | DATE | SCALE | D | 7102-051 | REV. |
| | | APPROVED BY: ML | RHE/Jo | M.Liepe | 2/12/2007 | | | | |
| | | | | | | | | SH. NO. 1 OF 4 | |

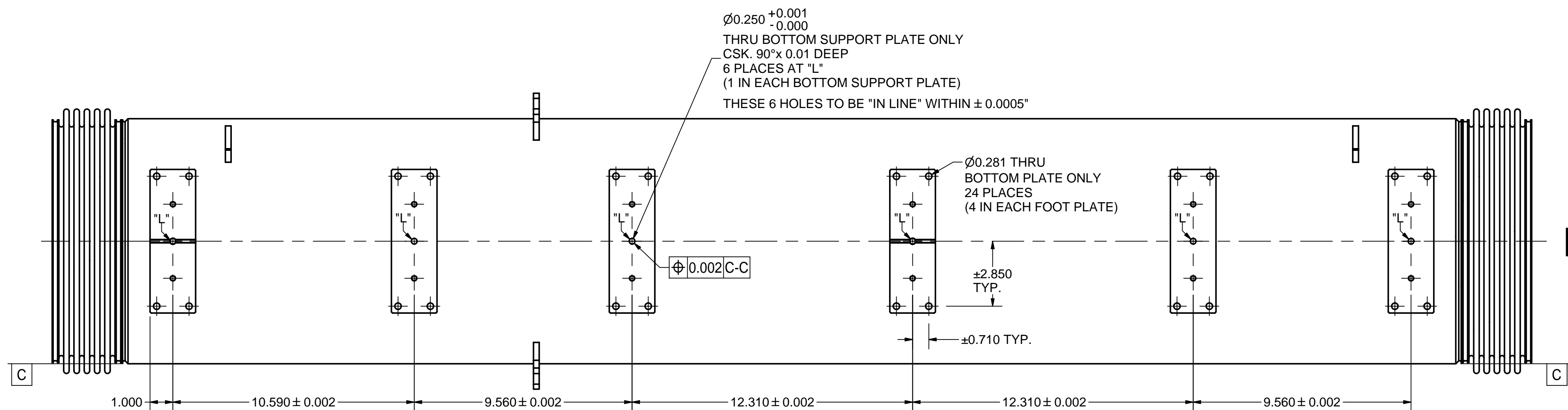
| REVISIONS | | | | |
|-----------|------|-------------|------|------|
| SYM. | ZONE | DESCRIPTION | DATE | APP. |



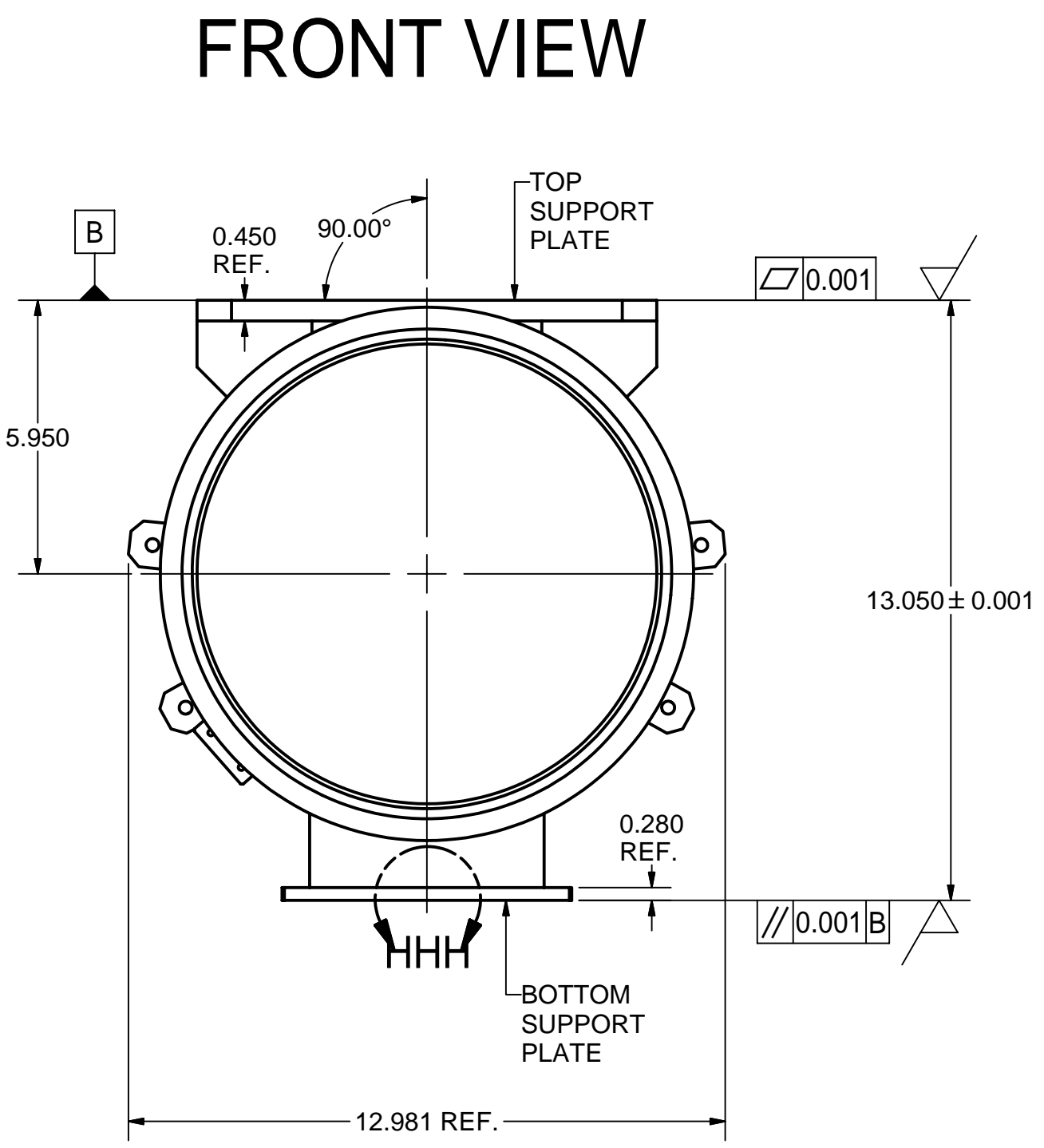
TOP VIEW



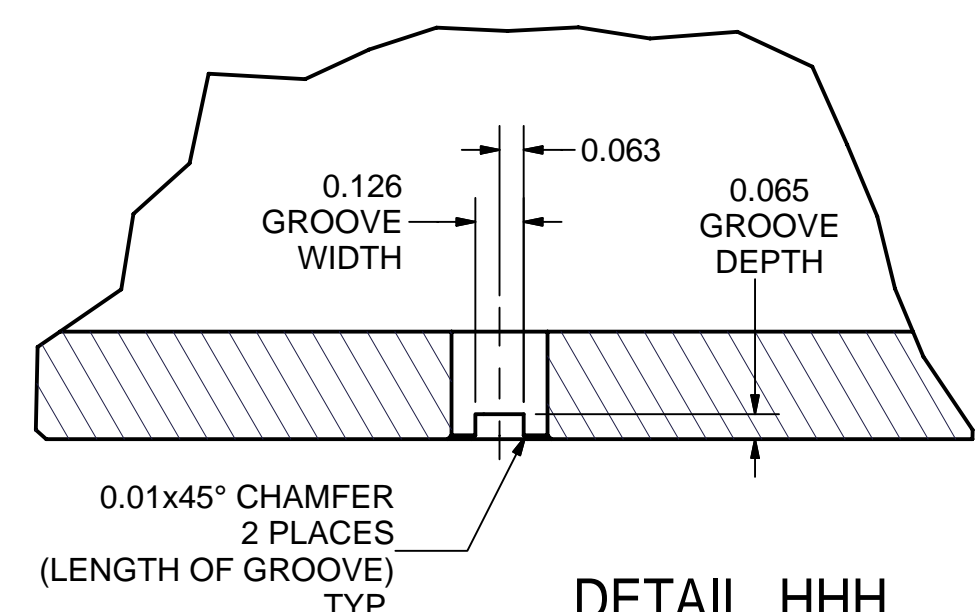
SIDE VIEW



BOTTOM VIEW




FRONT VIEW



DETAIL HHH
SCALE 2 : 1

NOTE: 0.126 WD. GROOVE IS CUT ONLY IN
TWO BOTTOM SUPPORT PLATES.
SEE BOTTOM VIEW

Release of final PO version for Meyer Tool - June 19, 2007.

| | | | | | | | | | |
|-------------------|-----------------|---|----------|-------------|---|-----------|-------|---------|----------------------------|
| | | ITEM | DWG. NO. | DESCRIPTION | G1 | G2 | G3 | REMARKS | REV. |
| | | | | | QUANTITY | | | | |
| | PRINT DISTR. | PLOT DATE: 6/19/2007 CAD FILE NAME: 7102-051.idw | | | | | | | |
| | CR-1 | <div>UNLESS OTHERWISE SPECIFIED:</div> <div>DIMENSIONS ARE IN INCHES:</div> <div>TOLERANCES ON:</div> <div>0 ± .02</div> <div>.00 ± .010</div> <div>.000 ± .005</div> <div>FRACTIONS ± 1/32</div> <div>ANGLES ± 0.5°</div> <div>ALL SURFACES </div> | | | <div> CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853</div> <div>ERL Injector Cryomodule Helium Gas Return Pipe, Middle Section HGRP MS Weldment II (Machining)</div> | | | | |
| SH. NO. 2 OF 4 | 7102-051 | CHECKED BY: VM | | DRAWN BY | DRAWN BY | DATE | SCALE | | 7102-051 SH. NO. 2 OF 4 |
| REV. | | APPROVED BY: ML | | RHE/Jo | M.Liepe | 2/12/2007 | | | |

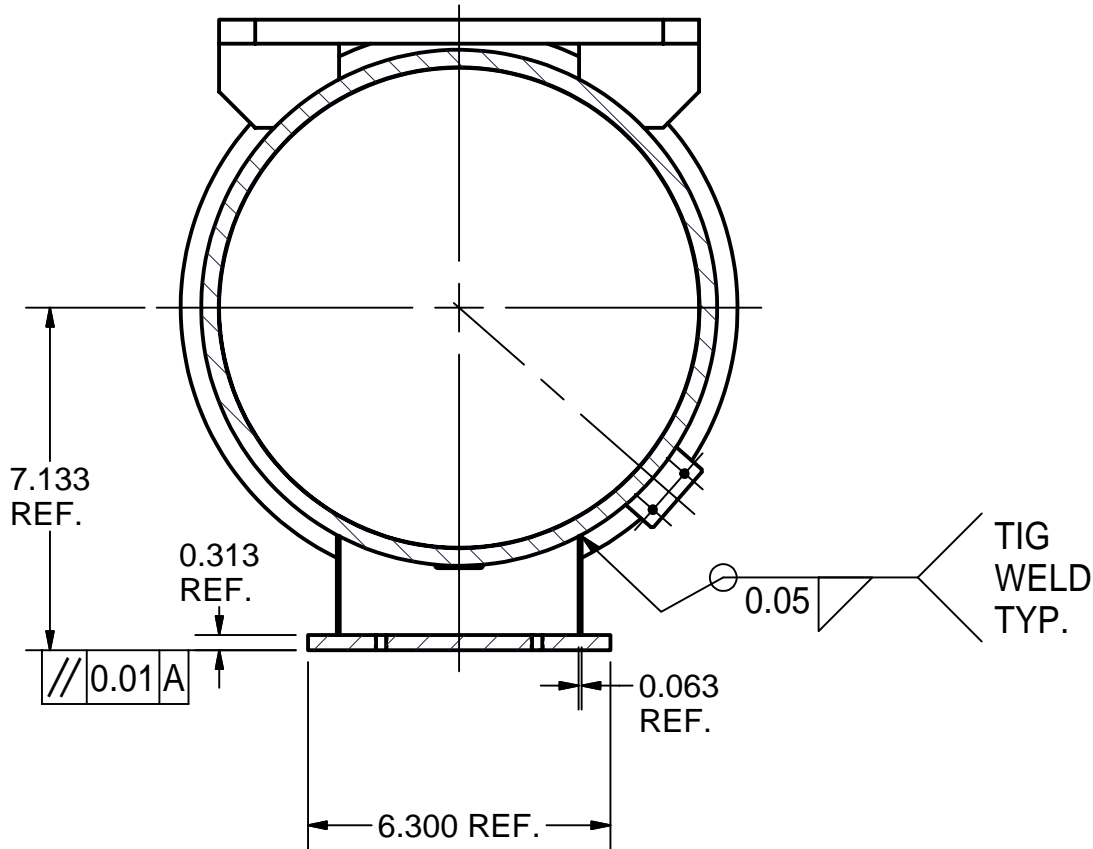
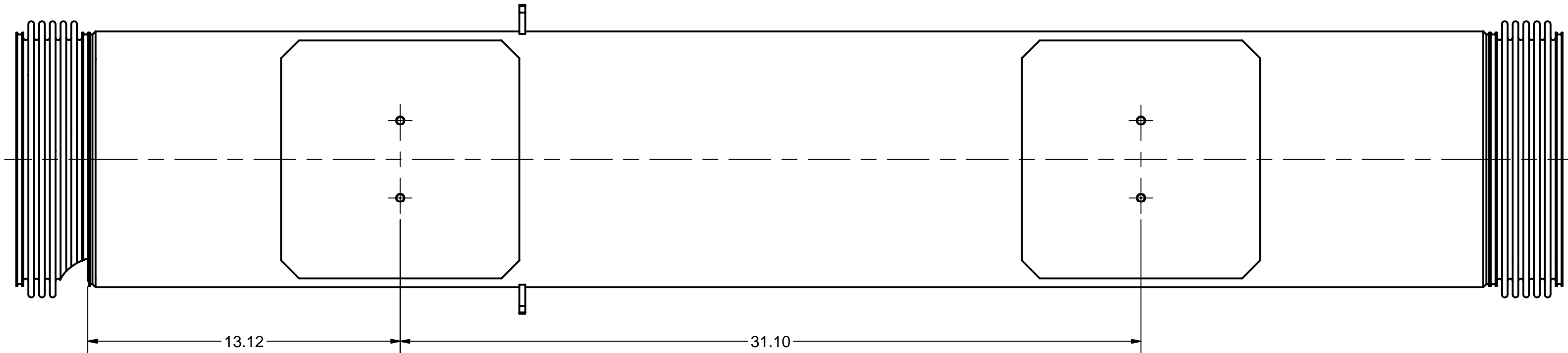
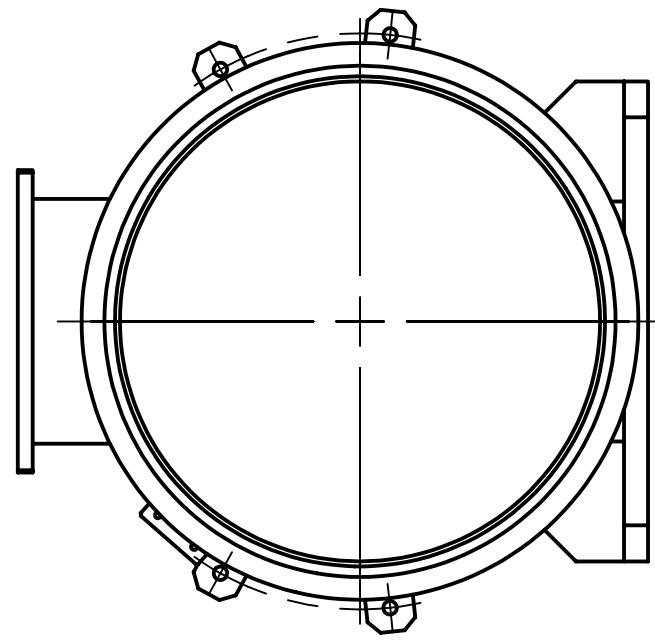
FOR MACHINING LUBRICANT USE ONLY
ALKALINE DETERGENT LUBRICANT CIMSTAR 40
OR EQUIVALENT APPROVED BY CORNELL LEPP

2 HGRP MS WELDMENT II (MACHINING)

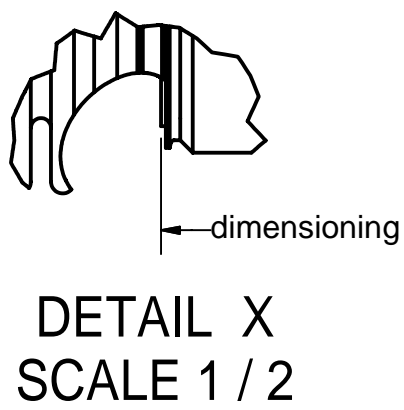
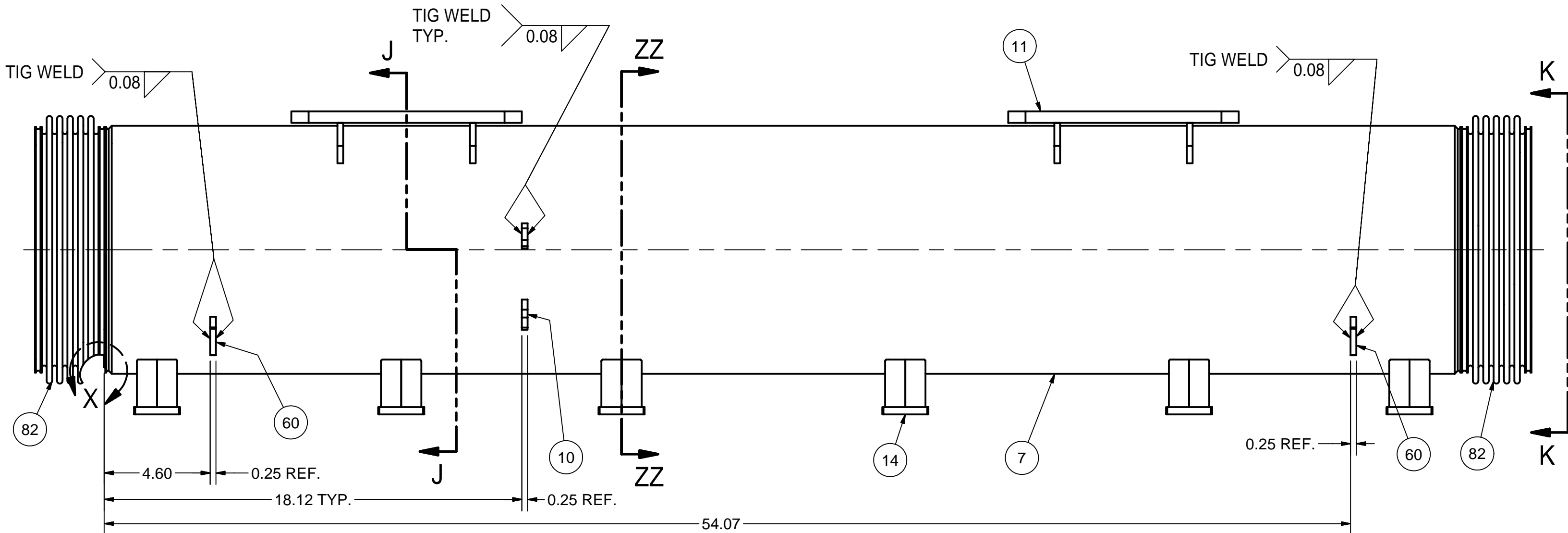
FILE NAME: 7102-051
SHEET NO.: 2
DFT. SCALE: 0.3:1
MATERIAL: MAKE FROM ITEM 3. (SEE NEXT SHEET)
QTY: 1 REQ'D

NOTES: 1. HEAT TREAT OR VIBRATE TO RELIEVE STRESS BEFORE FINAL MACHINING
2. MACHINE SURFACES OF TOP AND BOTTOM SUPPORT PLATES (SEE FRONT VIEW).
3. MACHINE HOLES IN TOP SUPPORT PLATES (SEE TOP SIDE VIEW).
4. MACHINE GROOVES AND HOLES IN BOTTOM SUPPORT PLATES (SEE DETAIL-HHH AND BOTTOM SIDE VIEW).

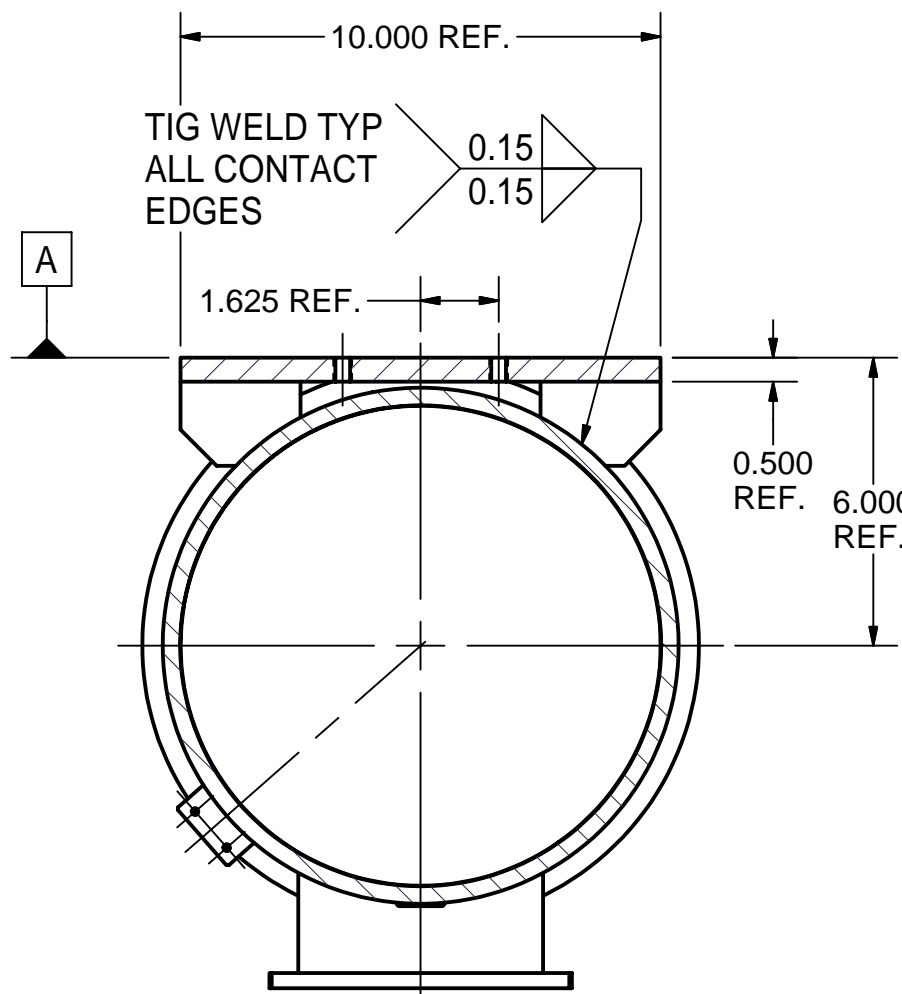
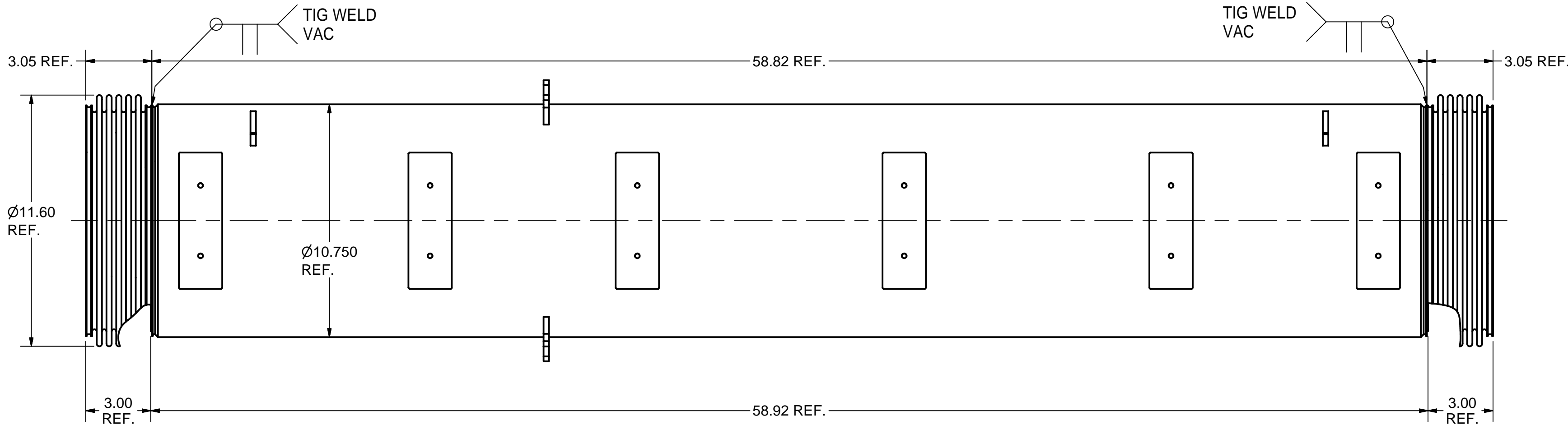
| REVISIONS | | | | |
|-----------|------|-------------|------|------|
| SYM. | ZONE | DESCRIPTION | DATE | APP. |



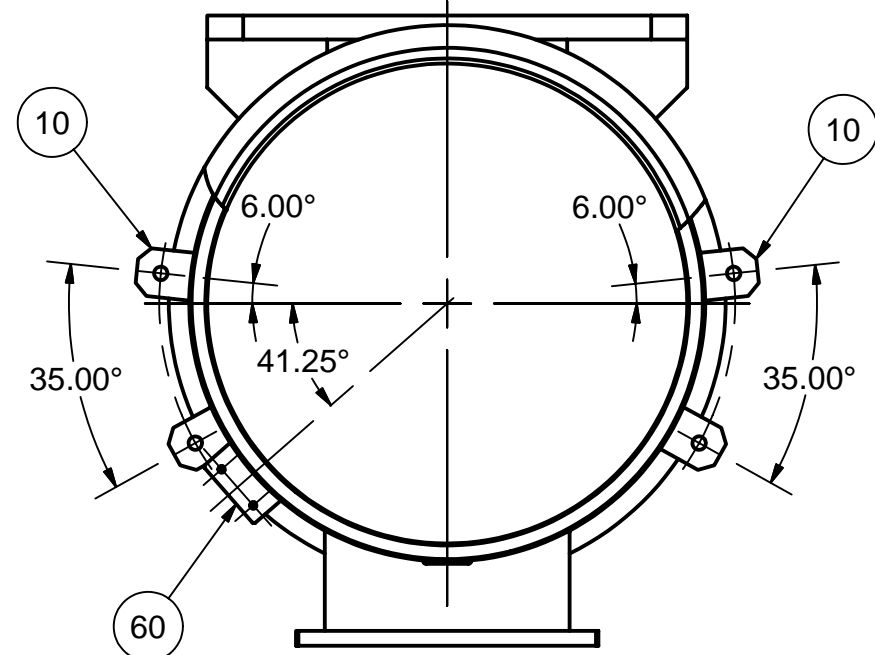
SECTION ZZ-ZZ



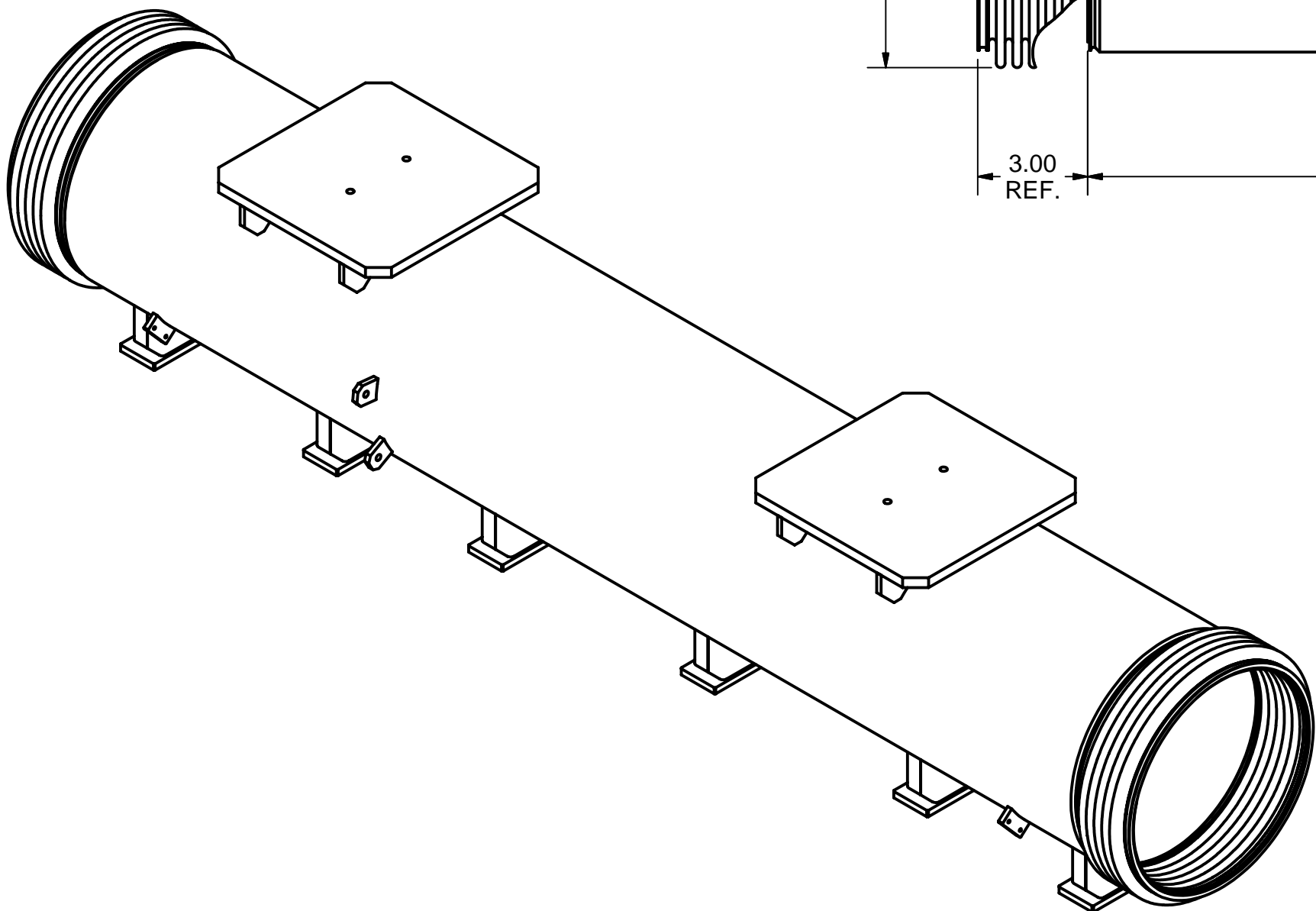
DETAIL X
SCALE 1 / 2



SECTION J-J
NOTE: SEE TOP VIEW



VIEW K-K
NOTE: SEE SIDE VIEW

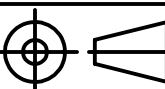



3 HGRP MS WELDMENT I (PRE-MACHINING)
FILE NAME: 7102-051
SHEET NO.: 3
DFT. SCALE: 1:4
MATERIAL: AS NOTED
QTY: 1 REQ'D.
NOTES: SEE PREVIOUS SHEET FOR
ADDITIONAL MACHINING.

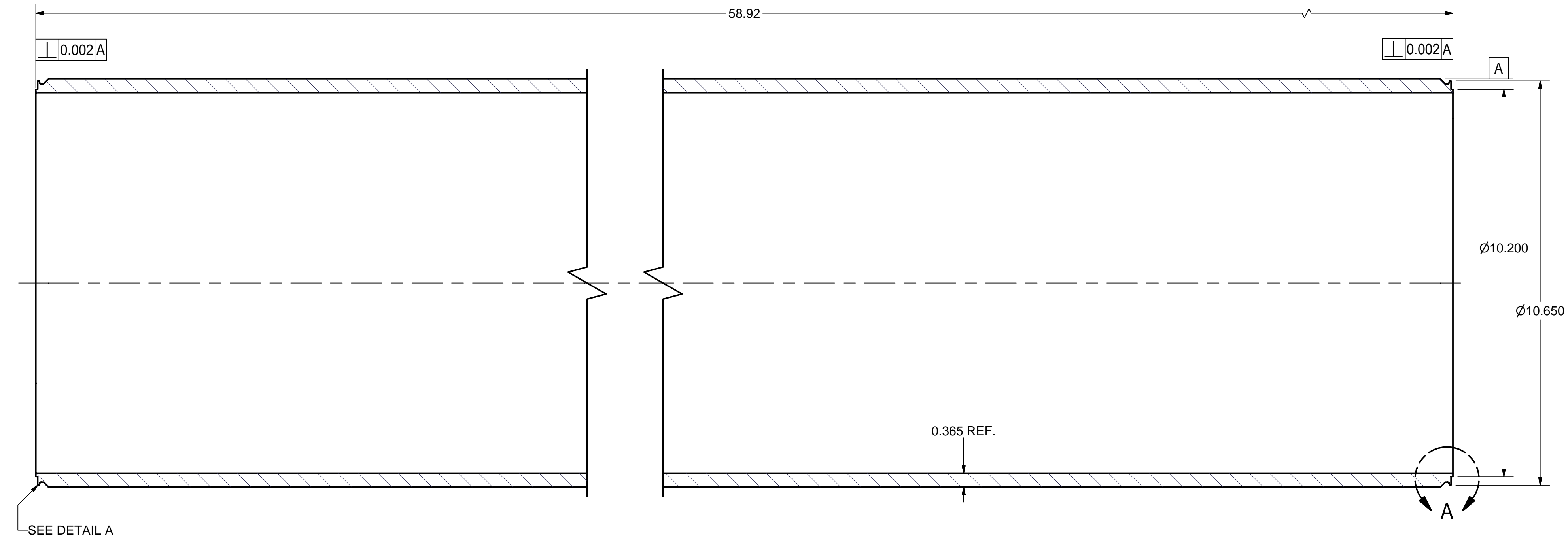
FOR MACHINING LUBRICANT USE ONLY
ALKALINE DETERGENT LUBRICANT CIMSTAR 40
OR EQUIVALENT APPROVED BY CORNELL LEPP

Release of final PO version for Meyer Tool - June 19, 2007.

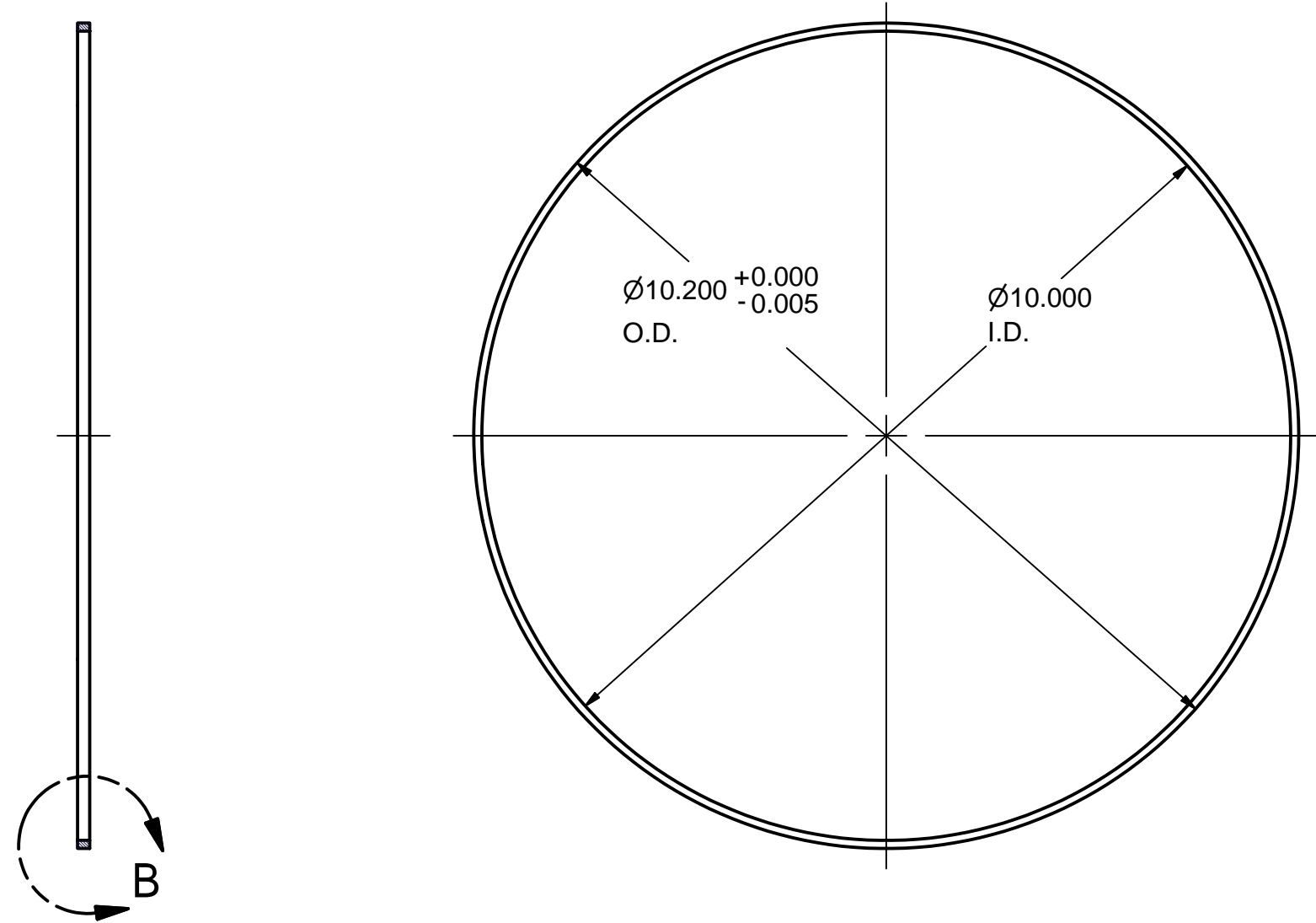
| | | | | | | | | |
|----|-------------------|------------------------------------|---|--|--|--|--|--|
| 82 | 7102-050 (SH. 12) | Ti-BELLOWS, SUB-ASM | 2 | | | | | |
| 60 | 7102-050 (SH. 11) | 2-PHASE TUBE SUPPORT TAB | 2 | | | | | |
| 14 | 7102-050 (SH. 8) | BOTTOM SUPPORT, SUB-ASM | 6 | | | | | |
| 11 | 7102-050 (SH. 8) | TOP SUPPORT PLATE, SUB-ASM | 2 | | | | | |
| 10 | 7102-050 (SH. 7) | 5 K TUBE SUPPORT PLATE | 4 | | | | | |
| 7 | 7102-051 (SH. 4) | HGRP MS PIPE | 1 | | | | | |
| 3 | 7102-051 (SH. 3) | HGRP MS WELDMENT I (PRE-MACHINING) | X | | | | | |

| | | | | | | | | | | |
|---|-----------------|---|---|--|-------------------|-------|----------|----|----------|------|
|  | ITEM | DWG. NO. | DESCRIPTION | | | G1 | G2 | G3 | REMARKS | REV. |
| | | | | | | | QUANTITY | | | |
| D | PRINT DISTR. | PLOT DATE: 6/19/2007 CAD FILE NAME: 7102-051.idw | | | | | | | | |
| SH. NO. 3 OF 4 | 7102-051 | CR-1 | UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES  | CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853 | | | | | | |
| | | | | ERL Injector Cryomodule Helium Gas Return Pipe, Middle Section HGRP Weldment I | | | | | | |
| REV. | | CHECKED BY: VM | DRAWN BY RHE/Jo | DRAWN FOR M.Liepe | DATE 2/12/2007 | SCALE | D | | 7102-051 | REV. |
| | | APPROVED BY: ML | SH. NO. 3 OF 4 | | | | | | | |

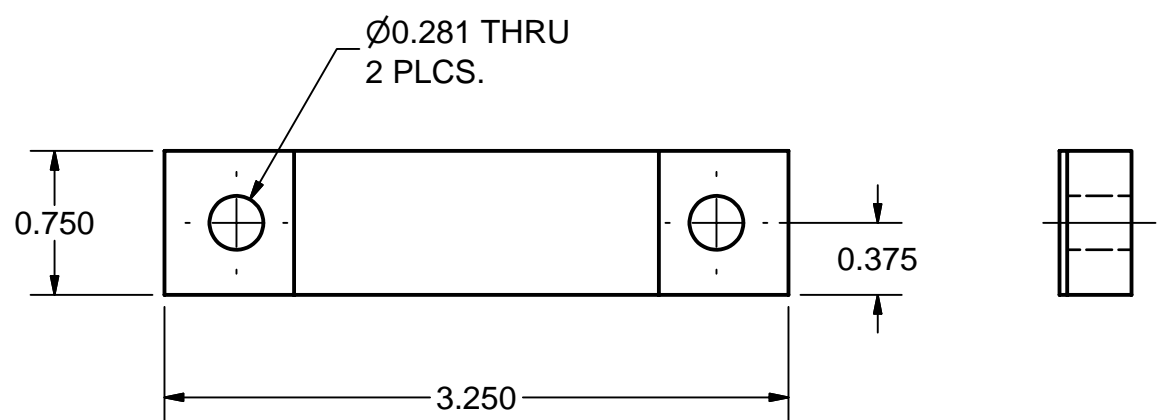
| REVISIONS | | | |
|-----------|------|-------------|-----------|
| SYM. | ZONE | DESCRIPTION | DATE APP. |



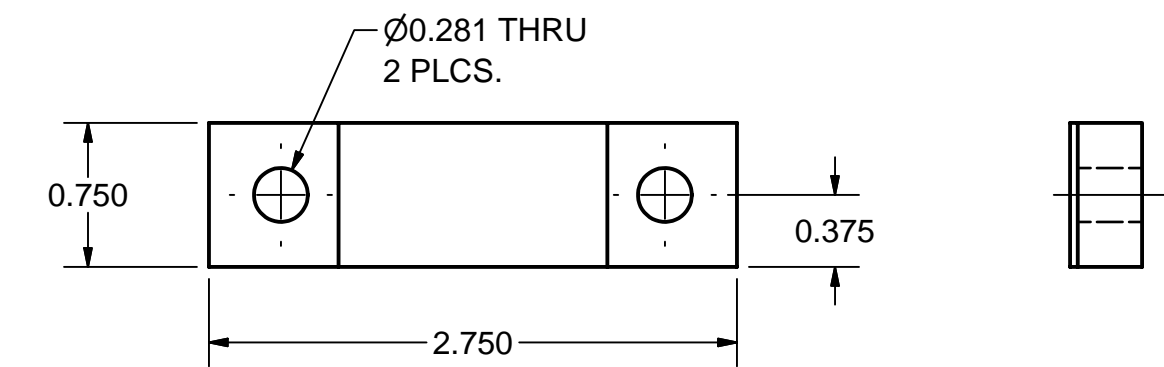
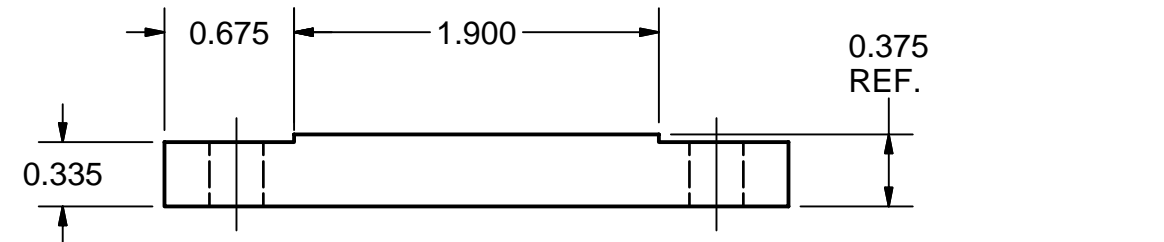
7 HGRP MS PIPE
FILE NAME: 7102-051
SHEET NO.: 4
DFT. SCALE: 1:2
MATERIAL: 10" SCHEDULE 40 PIPE, GRADE 2 TITANIUM
QTY: 1 PER ASM
NOTES:



85 CENTER RING
FILE NAME: 7102-051
SHEET NO.: 4
DFT. SCALE: 1:2
MATERIAL: TITANIUM
QTY: 2 TOTAL
NOTES:

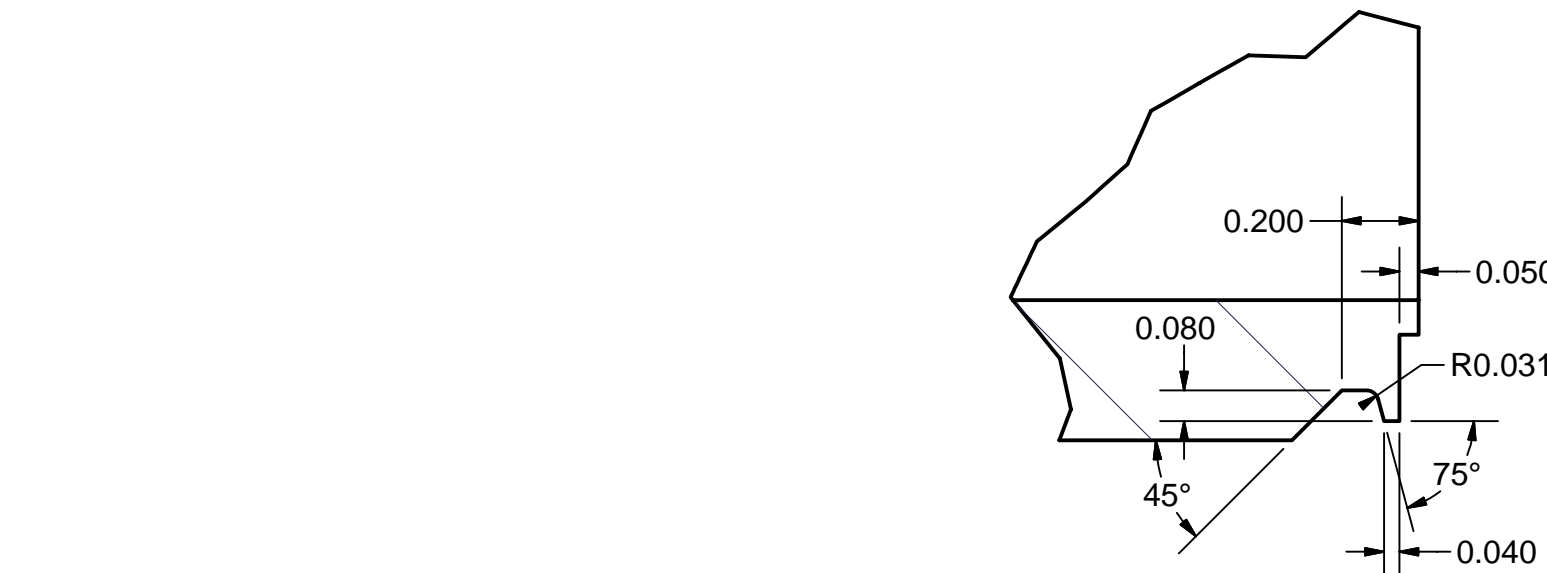


52 5 K TUBE FIXED CLAMP
FILE NAME: 7102-051
SHEET NO.: 4
DFT. SCALE: 1:1
MATERIAL: 3/8" SHEET G-10
QTY: 2 TOTAL
NOTES:

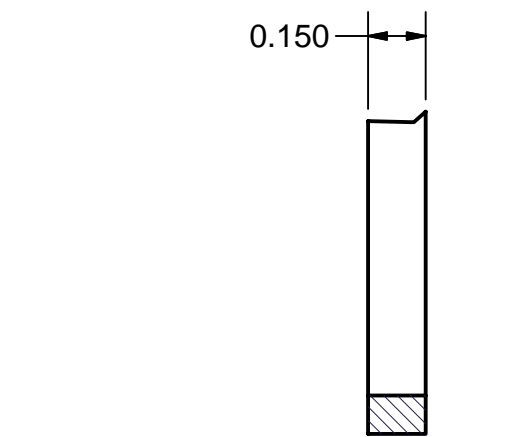


53 WARM-UP TUBE FIXED CLAMP
FILE NAME: 7102-051
SHEET NO.: 4
DFT. SCALE: 1:1
MATERIAL: 3/8" SHEET G-10
QTY: 1 TOTAL
NOTES:

FOR MACHINING LUBRICANT USE ONLY
ALKALINE DETERGENT LUBRICANT CIMSTAR 40
OR EQUIVALENT APPROVED BY CORNELL LEPP

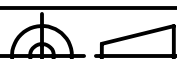




DETAIL A
SCALE 2 : 1



DETAIL B
SCALE 2 : 1

Release of final PO version for Meyer Tool - June 19, 2007.

| | | | | | | | | | | | | |
|---|-------------------------------|---|---|--|-------------|--------------------|----------------------|-------------------|------------|----------------------------|---------|------|
|  | ITEM | | DWG. NO. | | DESCRIPTION | | | G1 | G2 | G3 | REMARKS | REV. |
| | | | | | | | QUANTITY | | | | | |
| D | PRINT DISTR. | PLOT DATE: 6/19/2007 CAD FILE NAME: 7102-051.idw | | | | | | | | | | |
| | 7102-051 SH. NO. 4 OF 4 | CR-1 | UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES  | <div><div>CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853</div></div> <div>ERL Injector Cryomodule Helium Gas Return Pipe, Middle Section HGRP MS Pipe and Details</div> | | | | | | | | |
| | | | | CHECKED BY: VM | | DRAWN BY RHE/Jo | DRAWN FOR M.Liepe | DATE 2/12/2007 | SCALE D | 7102-051 SH. NO. 4 OF 4 | | |
| | | | | APPROVED BY: ML | | | | | | | | |
| REV. | | | | | | | | | | | | |