

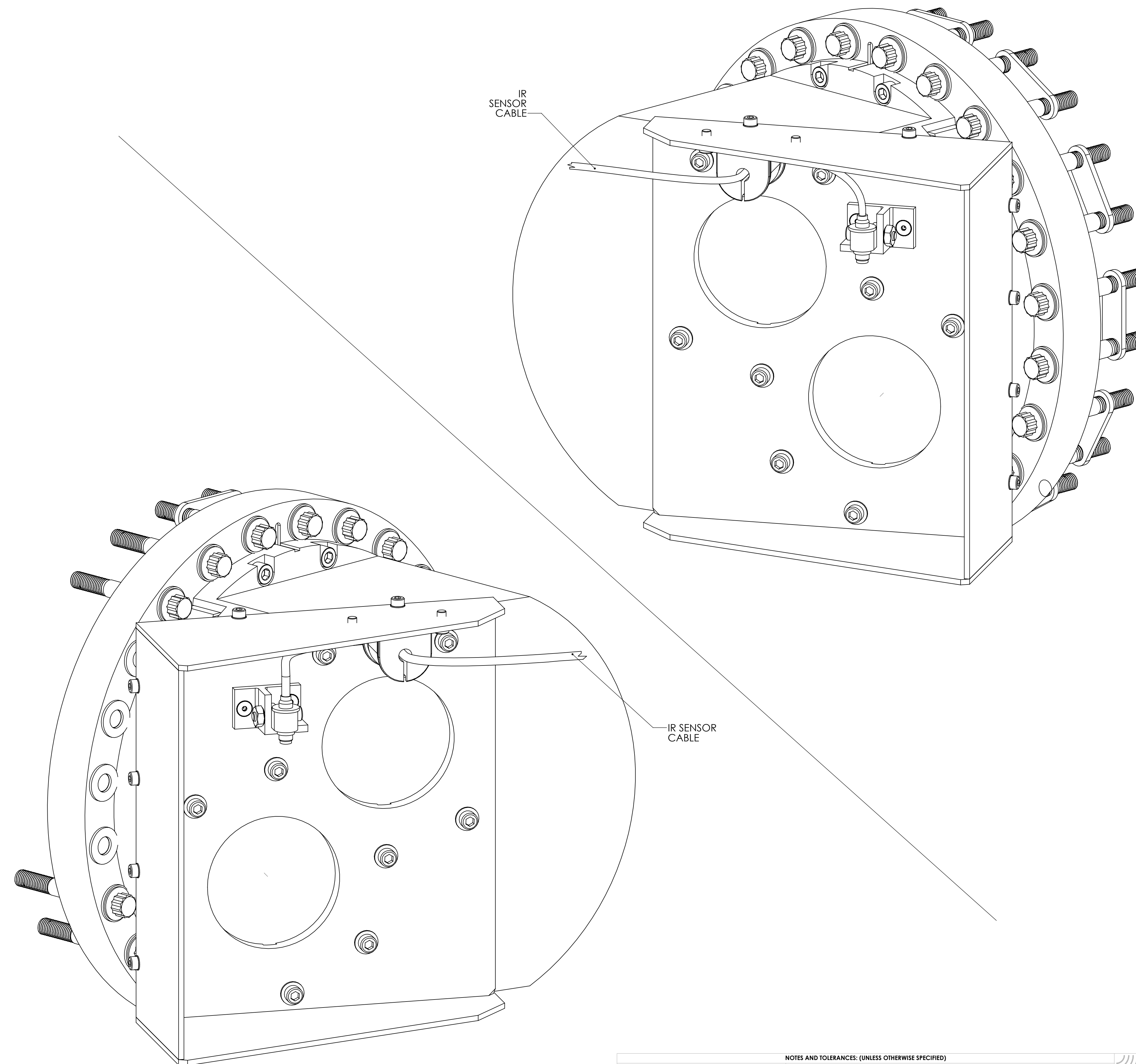
| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v2 | 06 DEC 2012 | E1200247-x0 | E1200248-v1 |
| v3 | 31 OCT 2013 | E1300826-v1 | E1200248-v2 |
| - | - | - | - |

| TYPE | DESCRIPTION |
|------|-------------------------|
| -01 | X-ARM CONFIG. (SHEET 2) |
| -02 | Y-ARM CONFIG. (SHEET 3) |

-01 DETAIL
(SEE SHEET 2 FOR EXPLODED VIEW)

| | | | | | |
|----|-----------------------------------|--|---------------|----|----|
| 35 | D1100495 | WASHER, CLAMP RING | PEEK | 2 | 2 |
| 34 | D1300973 | KAPTON WASHER-STYLE SHIM | KAPTON | 4 | 4 |
| 33 | D1300970 | WEDGED WASHER-STYLE SHIM | PEEK | 2 | 2 |
| 32 | | EBARA, NUT PLATE 5/16-24 | 18-8 SSSL | 12 | 12 |
| 31 | KNP-800-12 NORCAL OR EQ. | WASHER, FLAT, 5/16 | 18-8 SSSL | 24 | 24 |
| 30 | | BOLT, 12-POINT FLANGE-HEAD, 5/16-24 UNC-2A X 2.5 LG. | 18-8 SSSL | 24 | 24 |
| 29 | FA-606 UC COMPONENTS OR EQ. | SCREW, FHSC, 4-32 X .375 LG. | 18-8 SSSL | 2 | 2 |
| 28 | C-804 UC COMPONENTS OR EQ. | SCREW, SHC, #8-32 UNC-2A X 0.25 LONG | 300 SSSL | 2 | 2 |
| 27 | WF-08 UC COMPONENTS OR EQ. | WASHER, FLAT, #8 | 300 SSSL | 2 | 2 |
| 26 | C-1012 UC COMPONENTS OR EQ. | SCREW, SHC, #10-32 UNF-2A X 0.75 LONG | 300 SSSL | 8 | 8 |
| 25 | WF-10 UC COMPONENTS OR EQ. | WASHER, FLAT, #10 | 300 SSSL | 8 | 8 |
| 24 | C-408 UC COMPONENTS OR EQ. | SCREW, SHC, #6-32 UNC-2A X 0.5 LONG | 300 SSSL | 8 | 8 |
| 23 | WF-06 UC COMPONENTS OR EQ. | WASHER, FLAT, #6 | 300 SSSL | 8 | 8 |
| 22 | 8981T61 | SSTL 304 CABLE CLAMP, DAMPED, FOR .25 IN OD | AISI 304 | 1 | 1 |
| 21 | C-2016-N UC COMPONENTS OR EQ. | SHSC 1/4-20 UNC-3A X 1.0 LG. | 18-8 SSSL | 4 | 4 |
| 20 | C-2018-N UC COMPONENTS OR EQ. | SHSC 1/4-20 UNC-3A X 1-1/8 LG. | 18-8 SSSL | 6 | 6 |
| 19 | #191019 MDC OR EQ. | COPPER GASKET, 10" FLANGE | Copper | 1 | 1 |
| 18 | D1201528-02 | IR SENSOR SUB-ASSY, (Yarm) | N/A | - | 1 |
| 17 | D1201528-01 | IR SENSOR SUB-ASSY, (Xarm) | N/A | - | - |
| 16 | D1201421-02 | ZnSe VIEWPORT BEAM BLOCK, SHORT | AISI 304 | 1 | 1 |
| 15 | D1201421-01 | ZnSe VIEWPORT BEAM BLOCK, SHORT | AISI 304 | 1 | 1 |
| 14 | D1201420 | ZnSe VIEWPORT BEAM BLOCK, LONG | AISI 304 | 1 | 1 |
| 13 | D1201305-02 | COVER, SECONDARY VIEWPORT CLAMP (Yarm) | 6061 Alloy | - | 1 |
| 12 | D1201305-01 | COVER, SECONDARY VIEWPORT CLAMP (Xarm) | 6061 Alloy | 1 | - |
| 11 | D1201304-02 | SECONDARY VIEWPORT CLAMP | 6061 Alloy | - | 1 |
| 34 | D1201304-01 | SECONDARY VIEWPORT CLAMP (Xarm) | 6061 Alloy | 1 | - |
| 9 | D1201303-02 | PRIMARY VIEWPORT CLAMP, H1-L1 BSC 1 (Yarm) | 6061 Alloy | - | 1 |
| 8 | D1201303-01 | PRIMARY VIEWPORT CLAMP, H1-L1 BSC 3 (Xarm) | 6061 Alloy | 1 | - |
| 7 | D1100540 | aLIGO TCS .50" THICK OPTICAL WINDOW | S-Glass Fiber | 1 | 1 |
| 6 | D1100539 | aLIGO TCS .25 IN THICK OPTICAL WINDOW | S-Glass Fiber | 1 | 1 |
| 5 | D1100485 | .25 THICK, 60 MIN WEDGE, ZnSe WINDOW | Glass | 1 | 1 |
| 4 | D1100439 | .5 THICK, 60 MIN WEDGE, ZnSe WINDOW | Glass | 1 | 1 |
| 3 | D1003196-02 | CUSTOM 10-IN VP FLANGE, aLIGO TCS H1-L1 | 316 SSSL | - | 1 |
| 2 | D1003196-01 | TCS 10-IN CUSTOM VP FLANGE (Xarm) | 316 SSSL | 1 | - |
| 1 | OVITB-146-BV UC COMPONENTS OR EQ. | O-RING, 3 IN VIEWPORTS | VITON | 8 | 6 |

| ITEM NO. | PART NUMBER | DESCRIPTION | MATERIAL | D1101627-01 (Xarm AT BSC3)/REQ | D1101627-02 (Yarm AT BSC1)/QTY. |
|----------|-------------|-------------|----------|--------------------------------|---------------------------------|
|----------|-------------|-------------|----------|--------------------------------|---------------------------------|



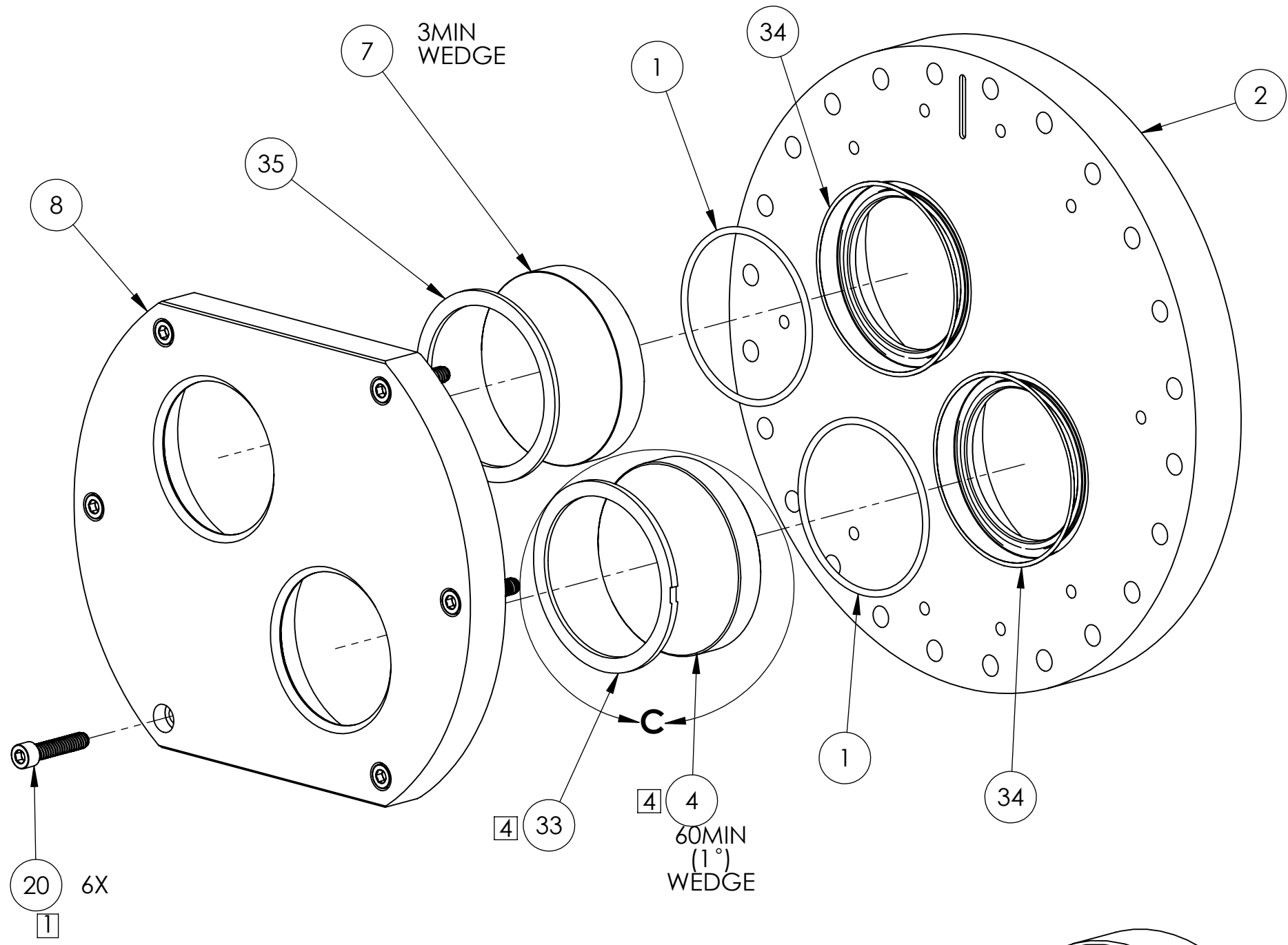
-02 DETAIL
(SEE SHEET 3 FOR EXPLODED VIEW)

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

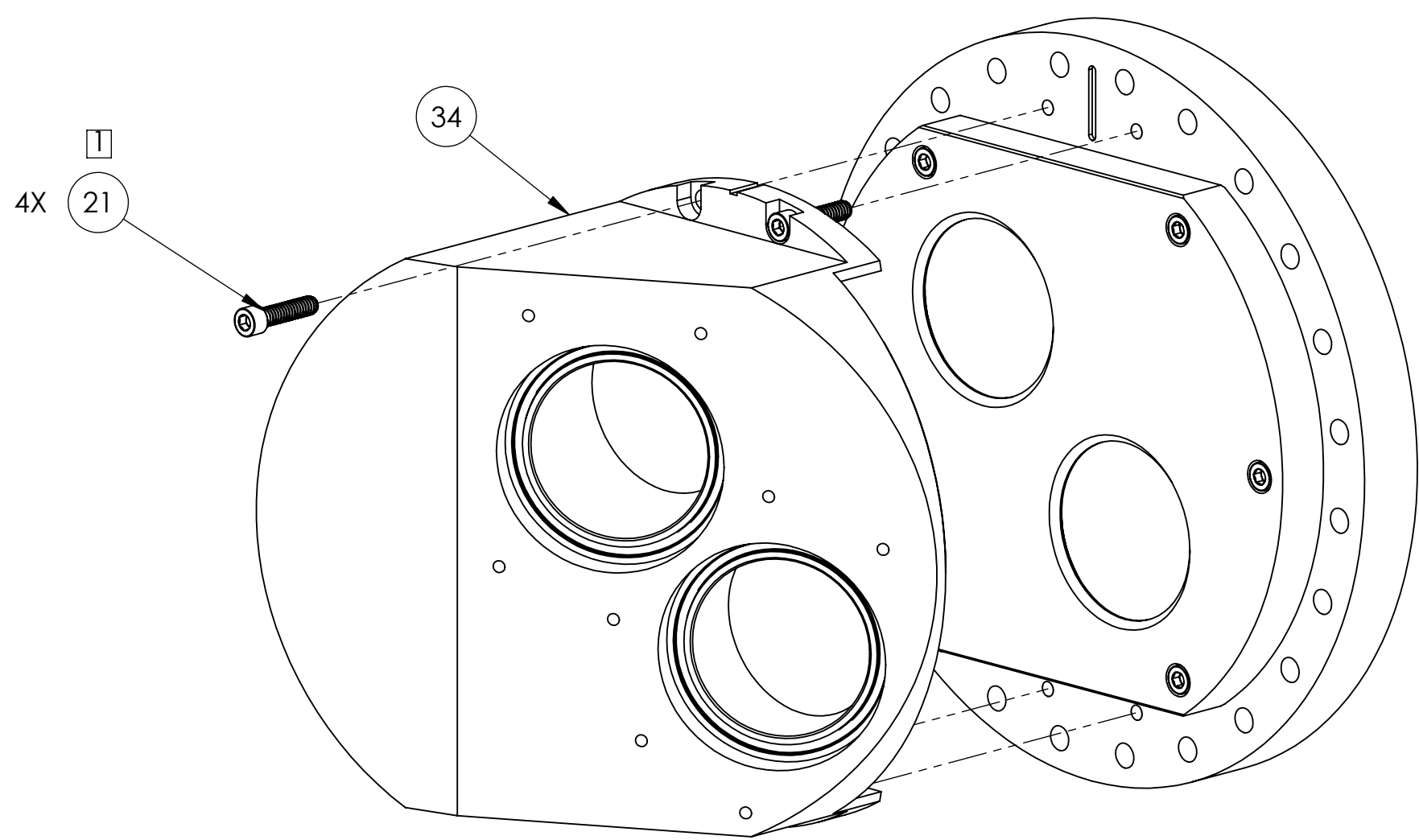
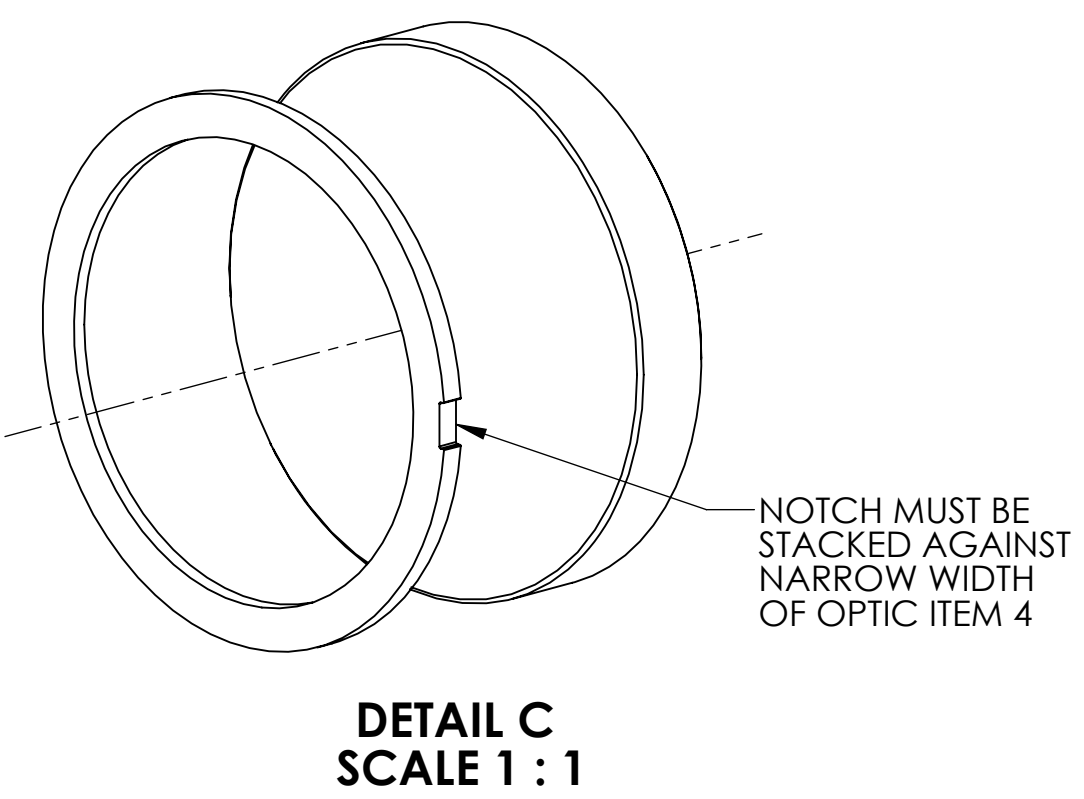
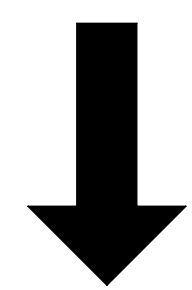
| | | | |
|----------|-----|--------|-----------|
| MATERIAL | N/A | FINISH | N/A μinch |
|----------|-----|--------|-----------|

| | | | |
|---|---------------|---|-----------------|
| CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME VIEWPORT ENCLOSURE ASSY, H1-L1 CO2P | |
| SYSTEM | ADVANCED LIGO | SUB-SYSTEM | AOS |
| DESIGNER | M. JACOBSON | 18 SEPT 2012 | SIZE DWG. NO. |
| DRAFTER | M. JACOBSON | 01 NOV 2013 | D |
| CHECKER | D. COYNE | 01 NOV 2013 | D1101627 |
| APPROVAL | J. WORDEN | 01 NOV 2013 | SCALE: 1:1 |
| | | PROJECTION: | SHEET 1 OF 3 |

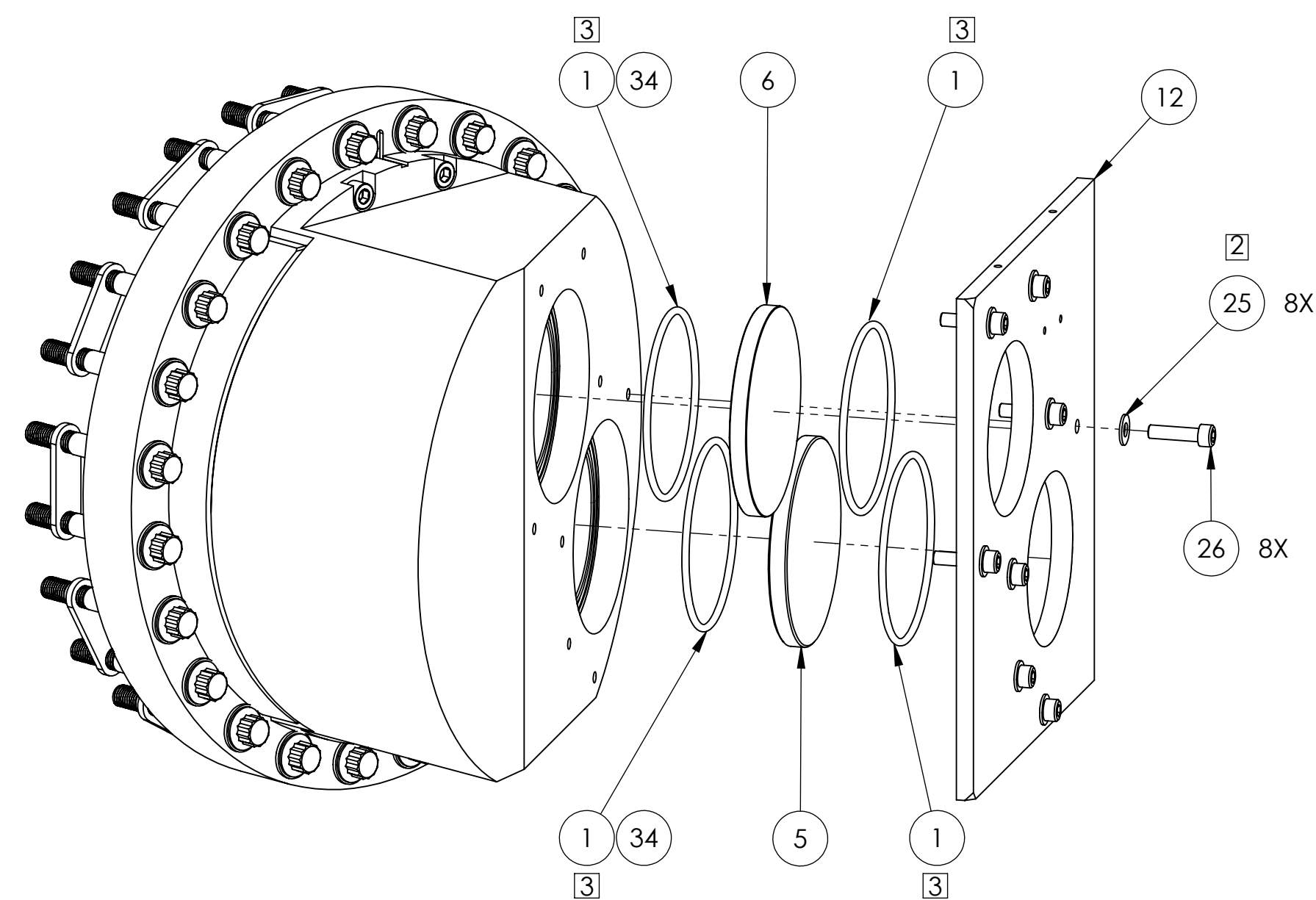
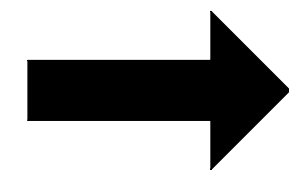
D1101627_VIEWPORT ENCLOSURE ASSY, H1-L1 CO2P, PART PDM REV. X-106, DRAWING PDM REV. X-009



STEP 1

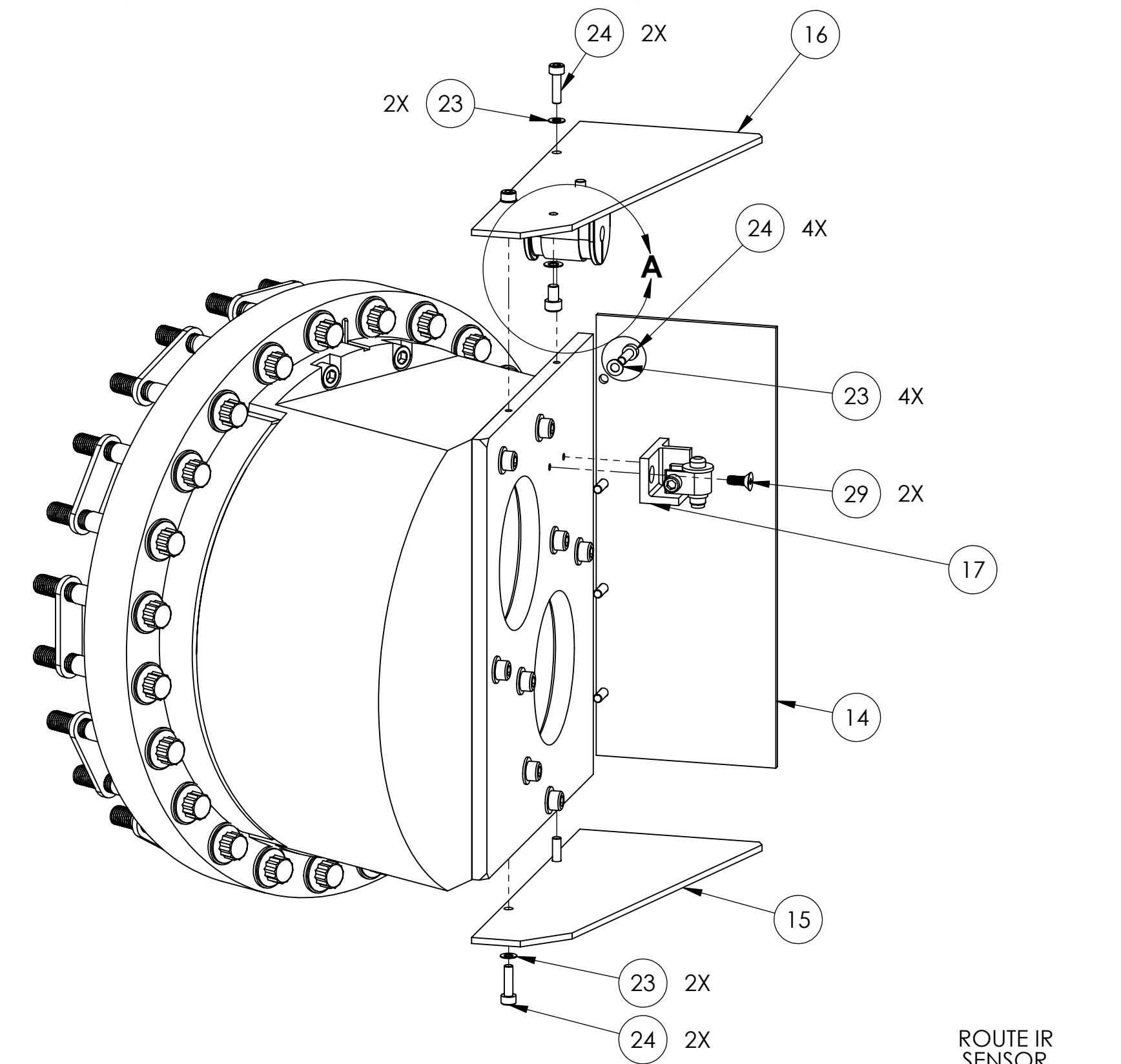
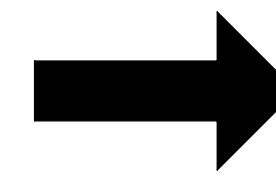
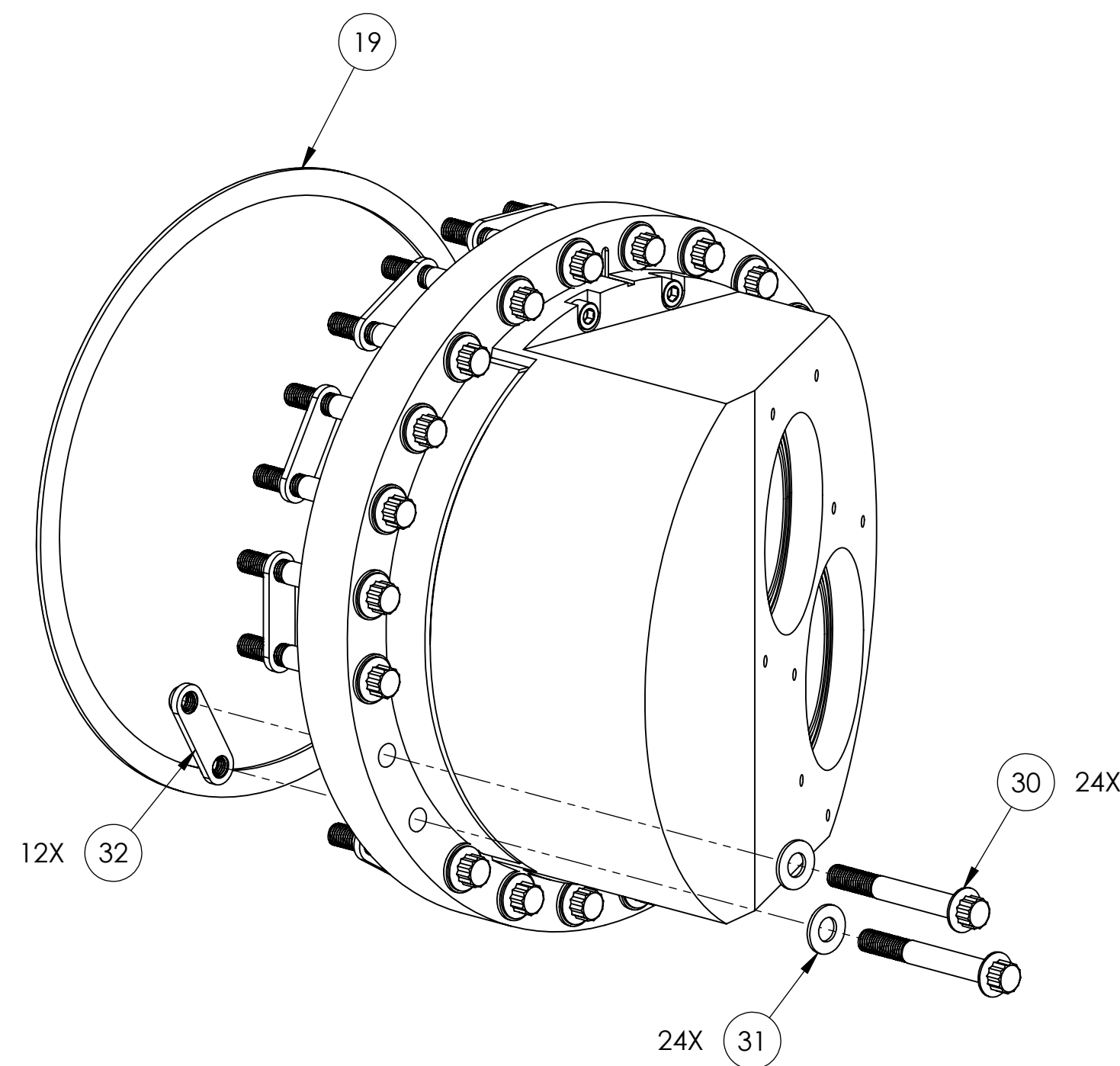
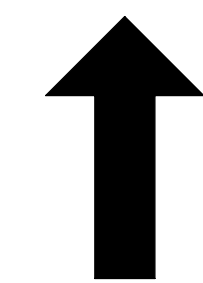


STEP 2

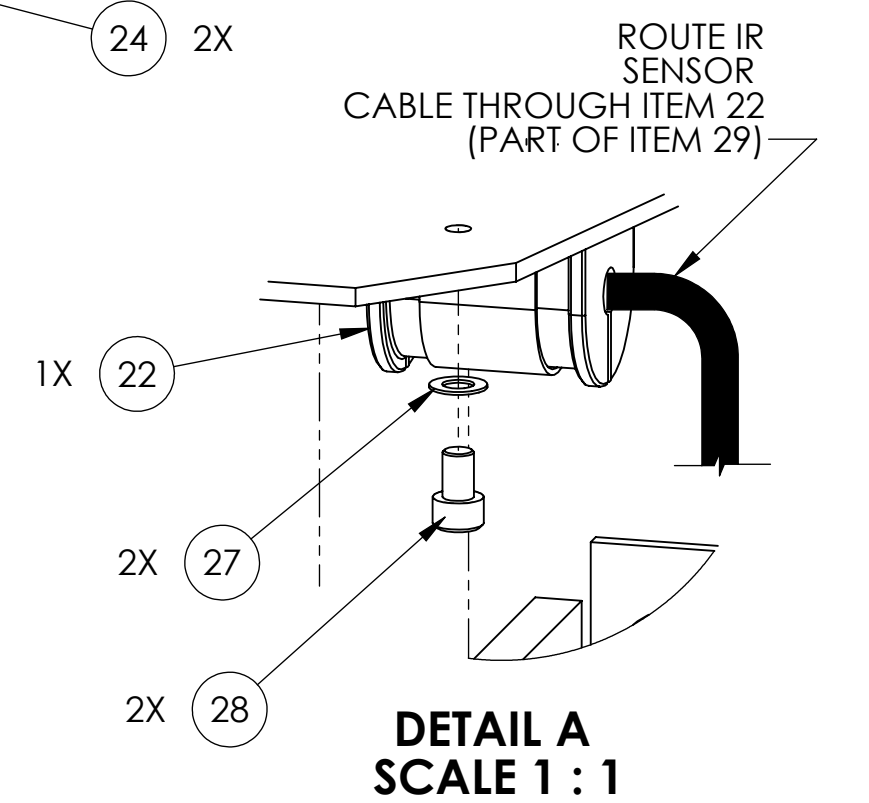
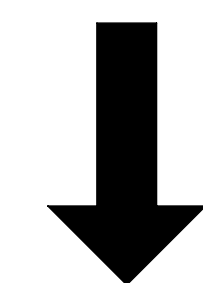


STEP 3

STEP 4



**STEP 5
(IR SENSOR CABLE, NOT SHOWN)**



ISO VIEW

1 TORQUE TO 65 IN-LB MAX.

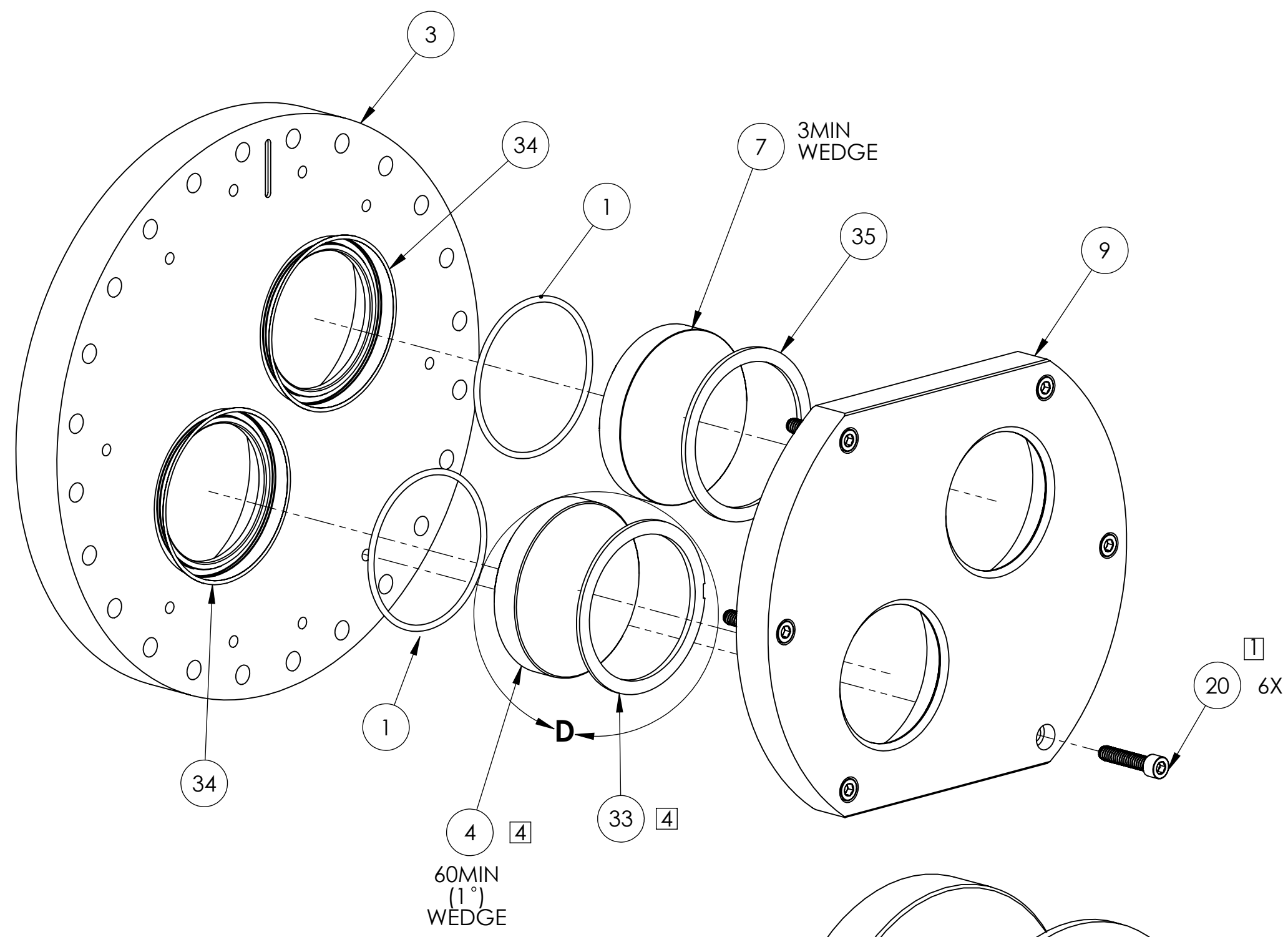
2 TORQUE TO 20 IN-LB MAX.

3 USING A CLEAN BLADE, MAKE SLITS IN O-RINGS, ALLOWING CAVITY TO VENT

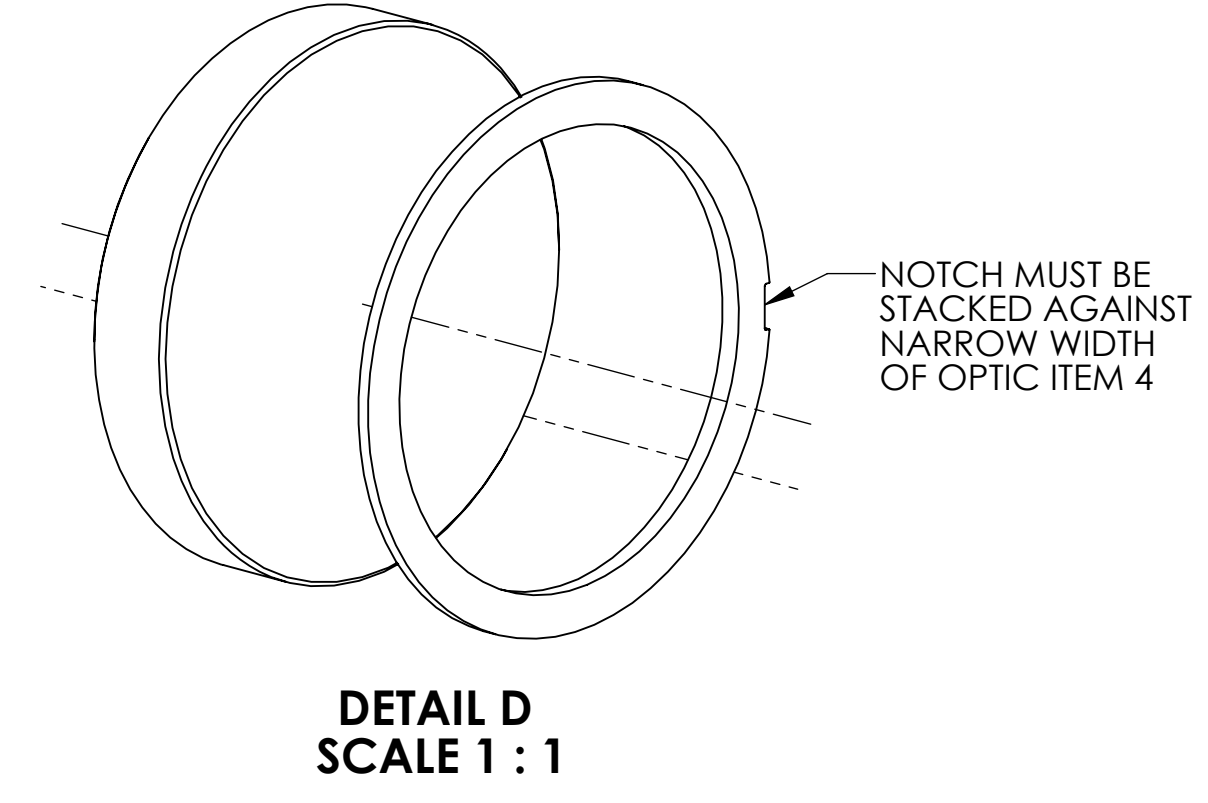
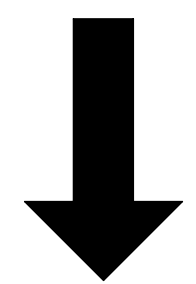
4 WEDGED ITEMS MUST BE ORIENTED AS INDICATED

| | | |
|---|-------------|--------------|
| LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | REV. |
| SIZE DWG. NO. | D1101627 | v3 |
| SCALE: 1:2 | PROJECTION: | SHEET 2 OF 3 |

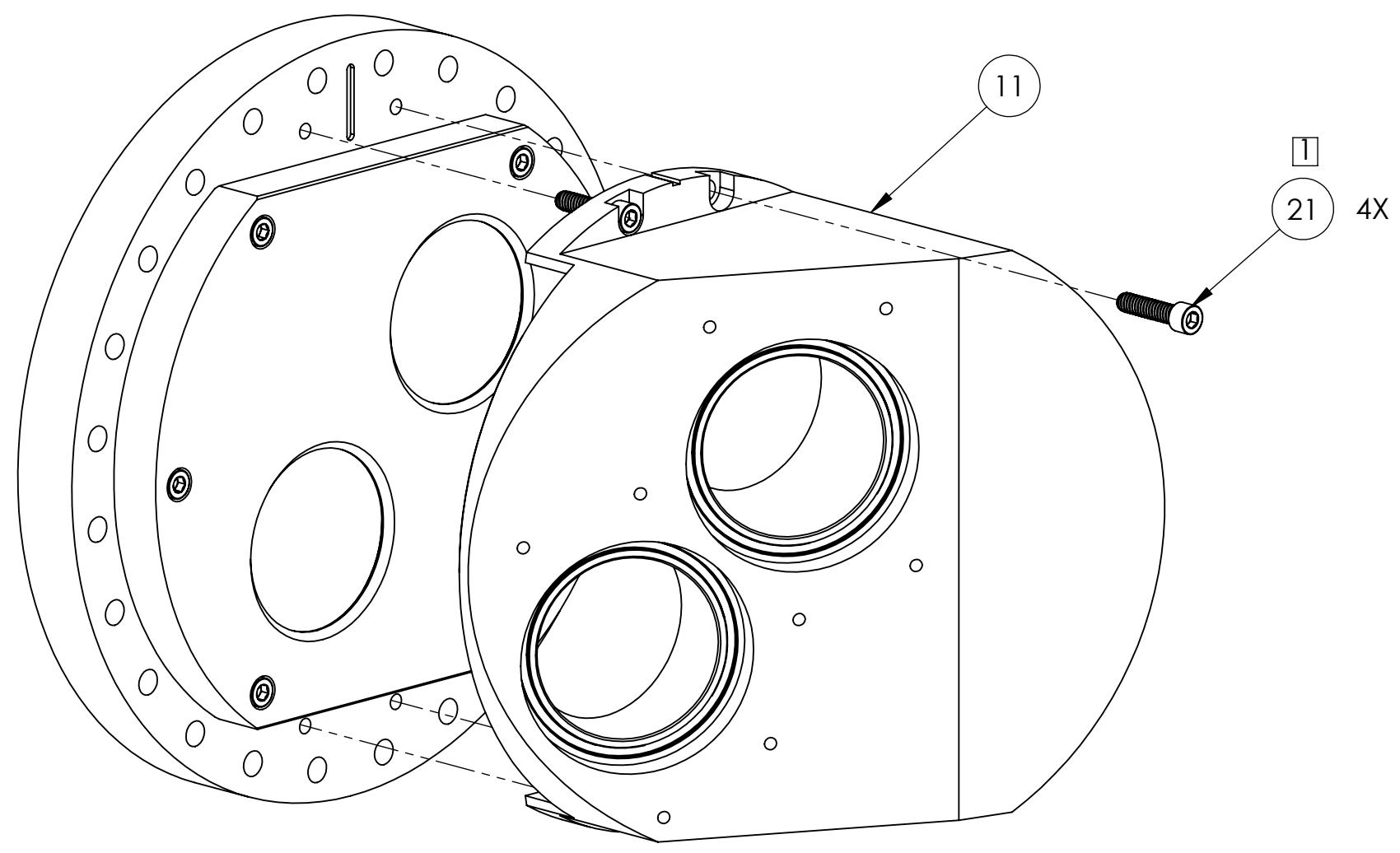
D1101627_VIEWPORT ENCLOSURE ASSY_H-I-LI_CO2P_PART PDM REV.X_104_DRAWING PDM REV.X_009



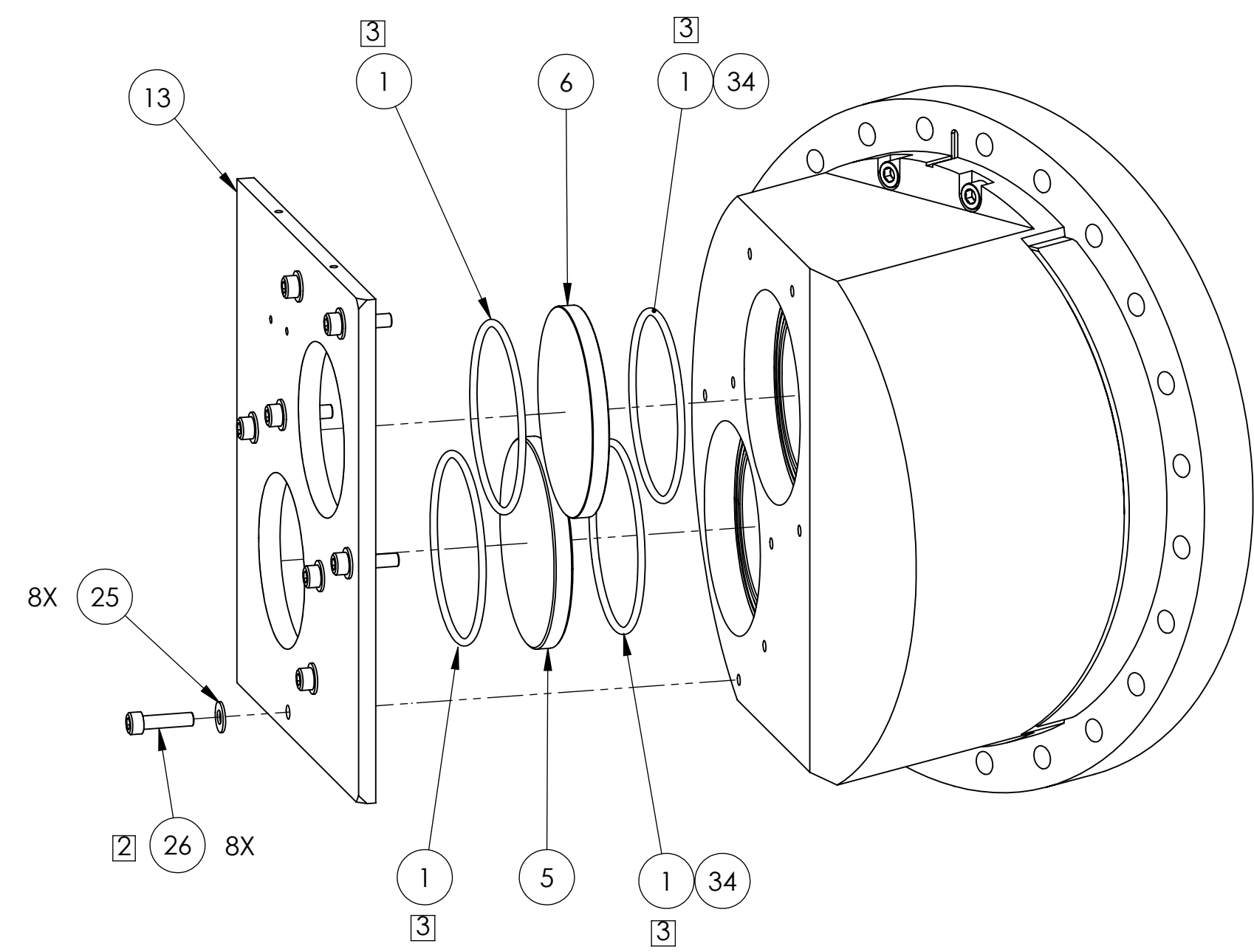
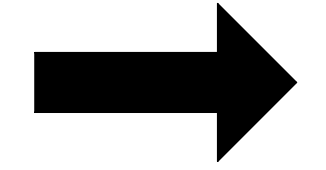
STEP 1



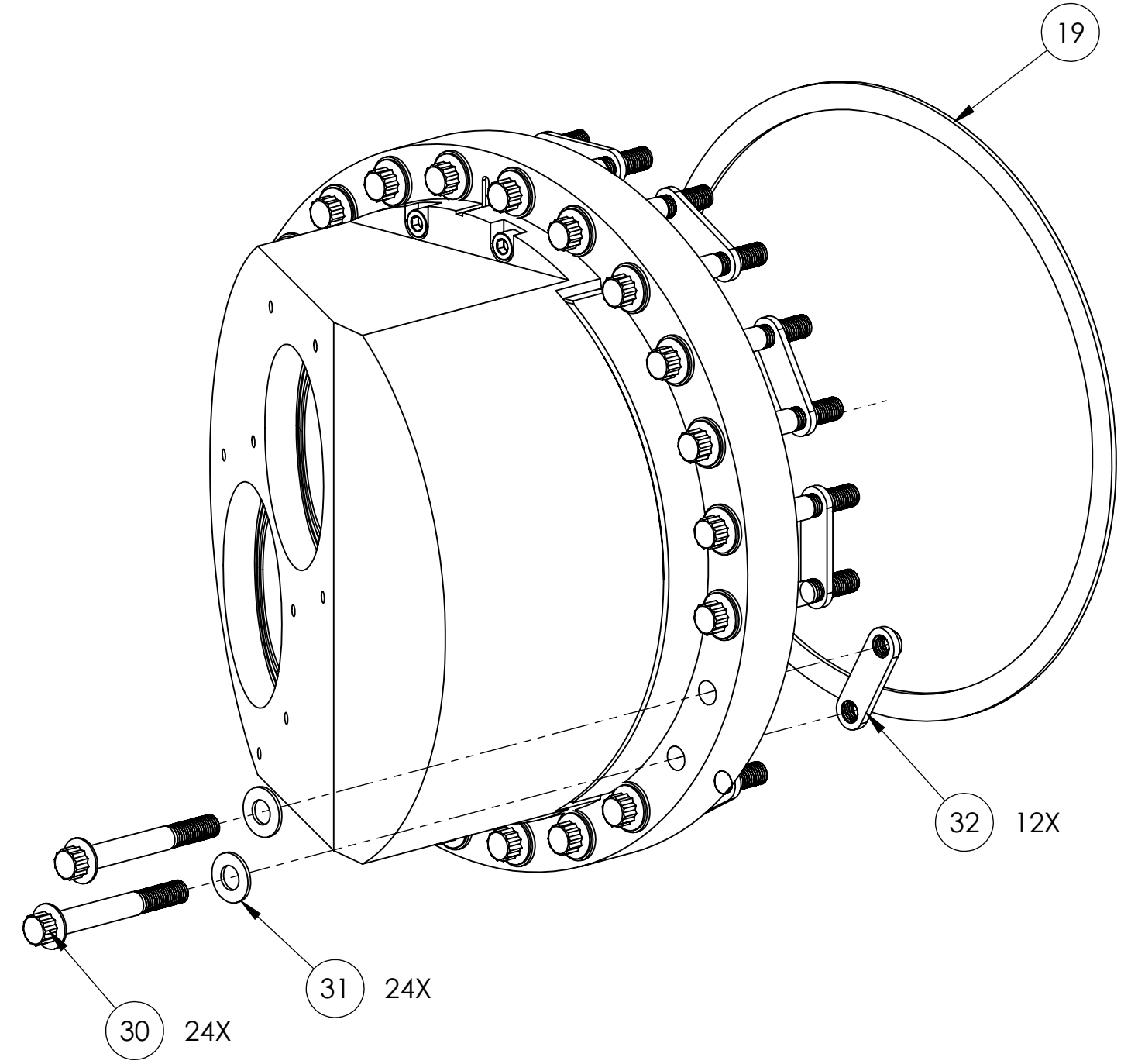
**DETAIL D
SCALE 1 : 1**



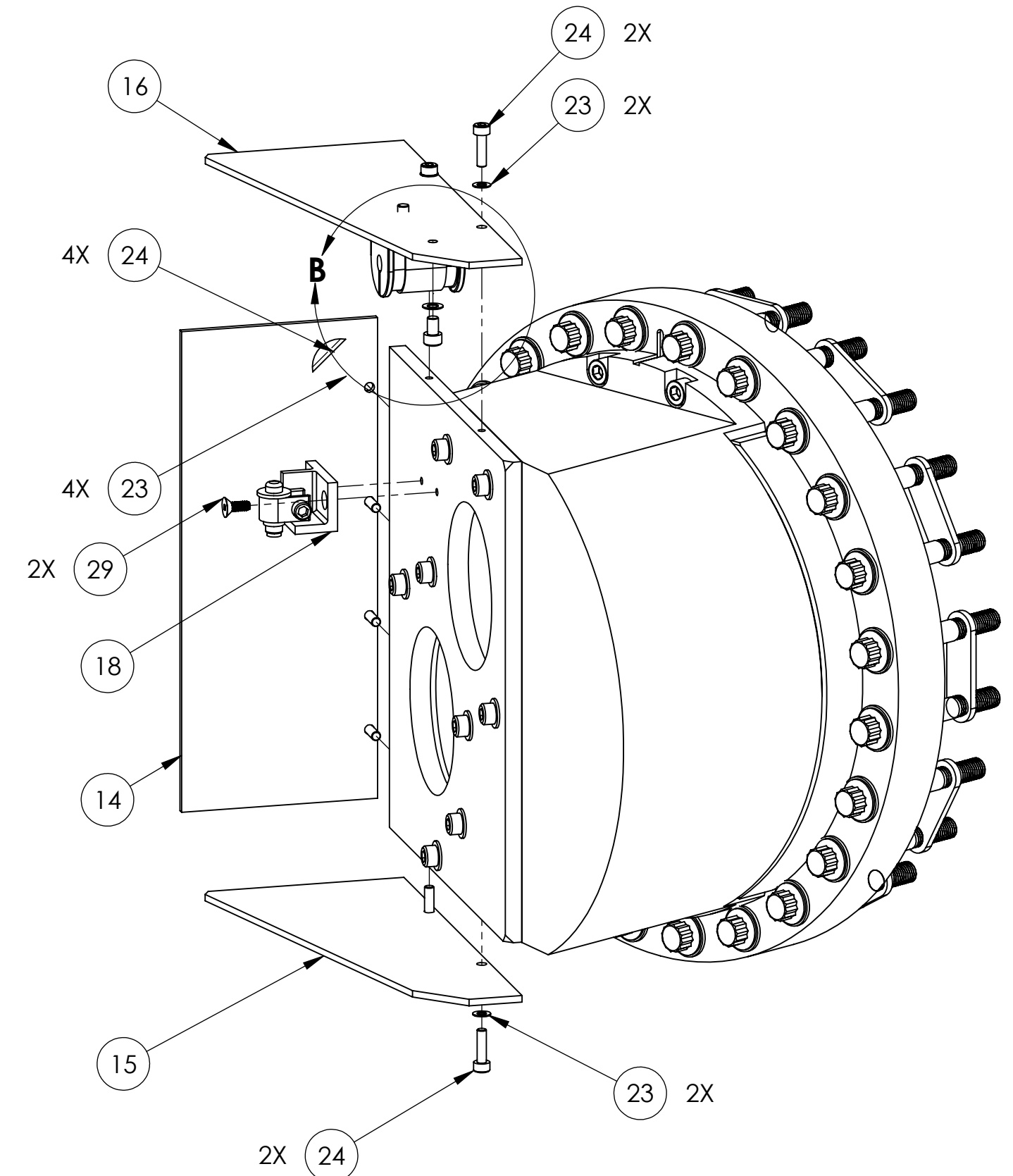
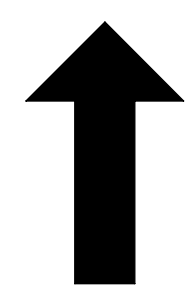
STEP 2



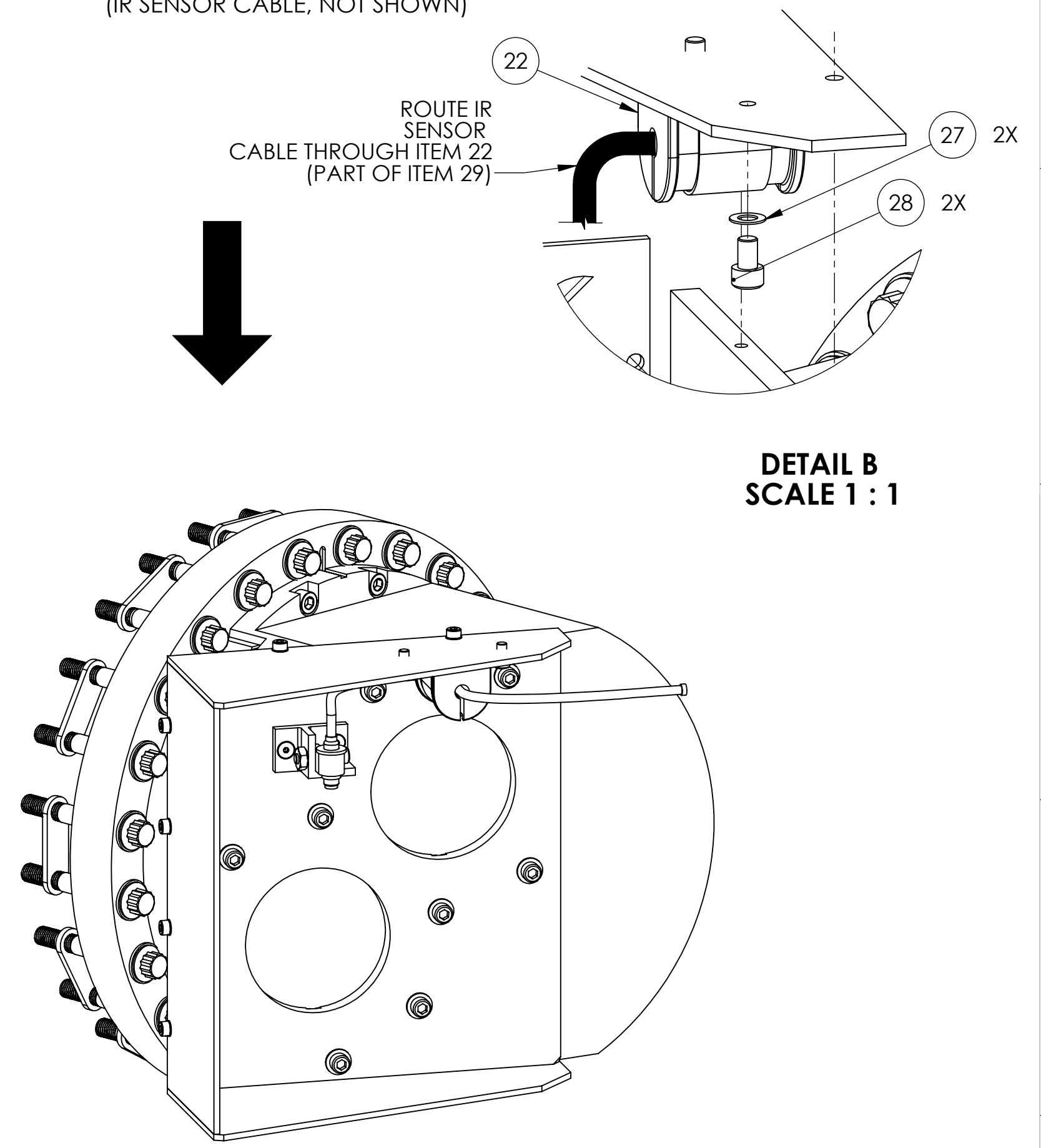
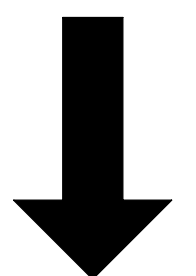
STEP 3



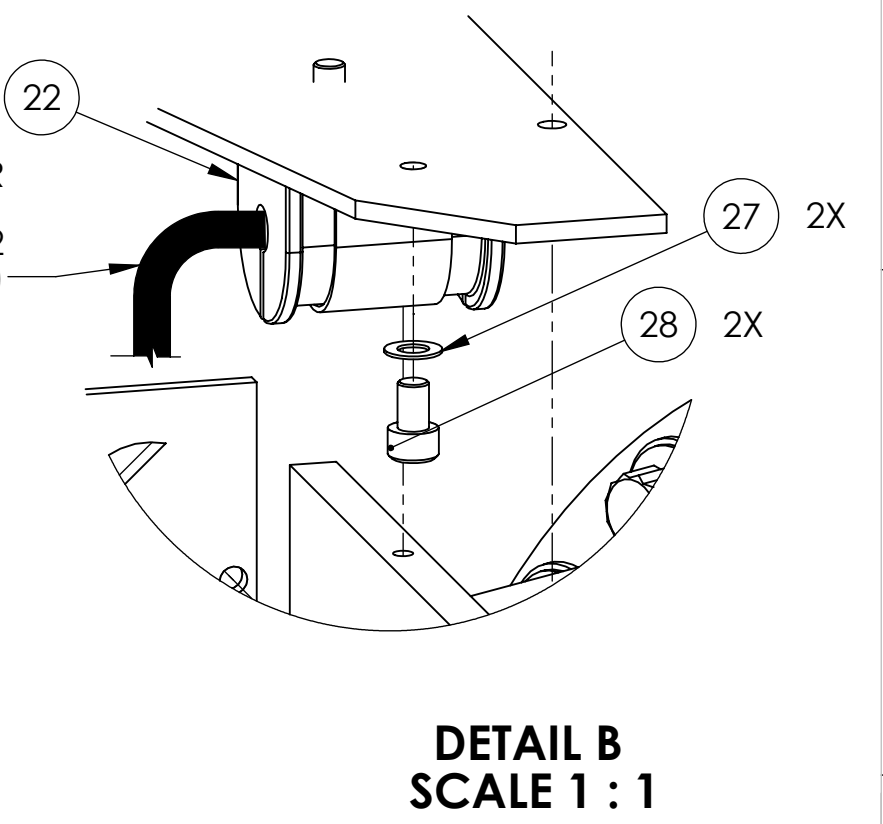
STEP 4



**STEP 5
(IR SENSOR CABLE, NOT SHOWN)**



ISO VIEW



**DETAIL B
SCALE 1 : 1**

- 1 TORQUE TO 65 IN-LB MAX.
- 2 TORQUE TO 20 IN-LB MAX.
- 3 USING A CLEAN BLADE, MAKE SLITS IN O-RINGS, ALLOWING CAVITY TO VENT
- 4 WEDGED ITEMS MUST BE ORIENTED AS INDICATED

| | |
|---|-------------|
| LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | |
| SIZE DWG. NO. | REV. |
| D D1101627 | v3 |
| SCALE: 1:2 | PROJECTION: |
| SHEET 3 OF 3 | |

D1101627_VIEWPORT ENCLOSURE ASSY_H-I-LI_COOPR_PART PDM REV.X_104_DRAWING PDM REV.X_009