| REV NO. | ECN NO. | ZONE | DESCRIPTION | DATE | APPRVD. |
|---|---|---|---|---|---|
| 1 | 177 | | INITIAL RELEASE | 08/08/2014 | BRD |
| 2 | 332 | | CHANGE DWG REF #3 TO 90337, WAS 90231 | 30SEP2016 | BRD |
| 3 | 469 | | ADDED 30HD TO TITLE BLOCK. | 19OCT2016 | BRD |

NOTES:

1) GYRO ASSEMBLY WEIGHT = 3920 LBS. (1778 kg)

2) RAW WATER COOLING REQUIREMENT IS 10-14 GPM (38-53 LPM). PROVIDED CONNECTIONS ARE 1 INCH ∅(25MM) HOSE BARB. USE OF RAW WATER STRAINER IS REQUIRED.

3) TWO LIFTING EYES ARE PROVIDED ON THE TOP OF THE GYRO FOR USE WITH A CHAIN/SPREADER BAR (SEE SHEET4).

4) IF A SOUND ENCLOSURE IS BUILT AROUND THE GYRO ASSEMBLY, A CIRCULATION/EXCHANGE FAN IS RECOMMENDED TO MAINTAIN AIR INSIDE THE SOUND ENCLOSURE AT THE SAME TEMPERATURE AS COMPARTMENT IN WHICH GYRO IS INSTALLED.

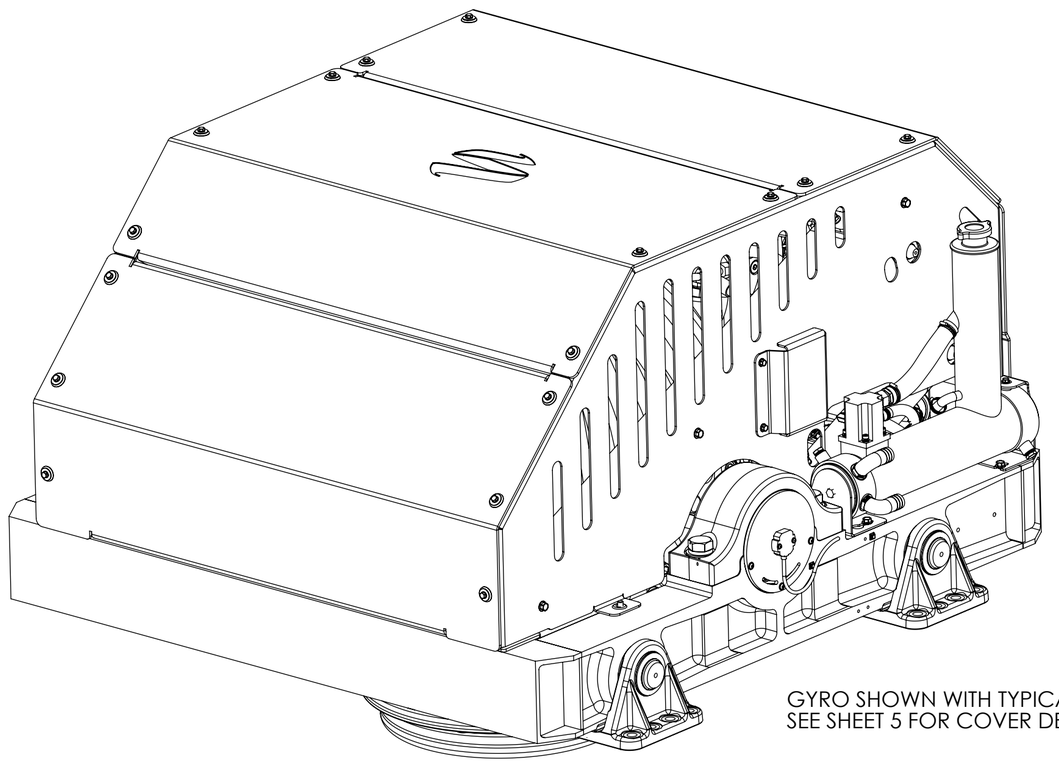
   NOTE THAT 20MM (3/4 INCH) OF CLEARANCE SHOULD BE PROVIDED IN ALL DIRECTIONS BETWEEN ANY ENCLOSURE AND THE GYRO'S SUPPORTING FRAME AND BRAKE MOUNTS AS THE GYRO WILL MOVE SLIGHTLY DURING OPERATION ON IT'S FOUR ISOLATION MOUNTS.

5) IF BEST SUITED FOR A PARTICULAR APPLICATION, GYRO MAY BE BOLTED DIRECTLY TO VESSEL'S STRUCTURE USING QTY 32 FASTENERS, 8 FASTENERS PER EACH OF FOUR ISOLATION MOUNTS. CONSULT SEAKEEPER, INC. FOR FASTENER SIZE AND MATERIAL INFORMATION. AS IS THE CASE WITH BOND-IN INSTALLATION USING SADDLES, THE STRUCTURE SHOULD BE CAPABLE OF CARRYING LOADS PROVIDED ON SHEET 6 OF THIS DRAWING WITH THE RECOMMENDED SAFETY MARGIN.

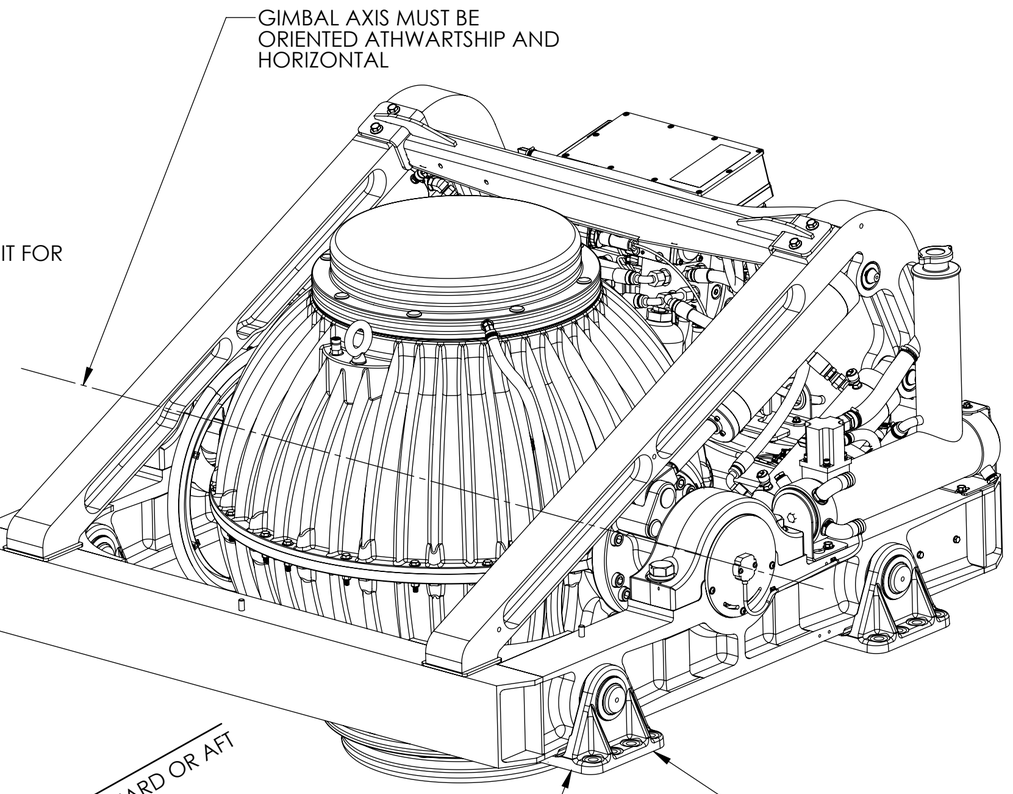
6) MUST USE SEAKEEPER PART NO.90089, BOLT-IN INSTALLATION FIXTURE KIT , PROVIDED WITH GYRO, TO LOCATE GYRO MOUNTING HOLES IN THE VESSEL'S STRUCTURE.

7) **IMPORTANT!** SEE SHEETS 2, 3 & 4 FOR HULL STRUCTURE INTERFACE DIMENSIONS AND REQUIRED CLEARANCE UNDER UNIT FOR MOVEMENT OF HOSES AND CABLES.

8) SEE REFERENCES 1 THROUGH 6 FOR INSTALLATION INFORMATION.



GYRO SHOWN WITH TYPICAL COVERS,
SEE SHEET 5 FOR COVER DETAILS




STRUCTURAL SUPPORT FOR ISOLATION MOUNTS (4) SHALL BE PARALLEL TO VESSEL WATERLINE

ALUMINUM ISOLATION MOUNTS TO BE BOLTED TO BUILDER PROVIDED GRP LONGITUDINAL BEAMS / HULL STRUCTURE SEE NOTE 5

SEE SHEETS 2 THRU 4 FOR GYRO FOUNDATION DIMENSIONS

SEE SHEET 6 FOR GYRO LOADS FOR HULL FOUNDATION DESIGN

SEE NOTE 4 FOR SAFETY/SOUND ENCLOSURE

| REF. | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 90290 | SEAKEEPER 35 GYRO COOLING WATER SCHEMATIC |
| 2 | 90288 | SEAKEEPER 35 GYRO CABLE BLOCK DIAGRAM |
| 3 | 90337 | OPERATOR DISPLAY ENVELOPE & MOUNTING INSTRUCTIONS |
| 4 | 90089 | SEAKEEPER 35 GYRO BOLT-IN INSTALLATION FIXTURE KIT |
| 5 | 90268 | SEAKEEPER 35 GYRO INSTALLATION MANUAL |
| 6 | 90086 | SEAKEEPER 35 GYRO BOLT-IN INSTALLATION KIT |



WEIGHT - LBS : ---

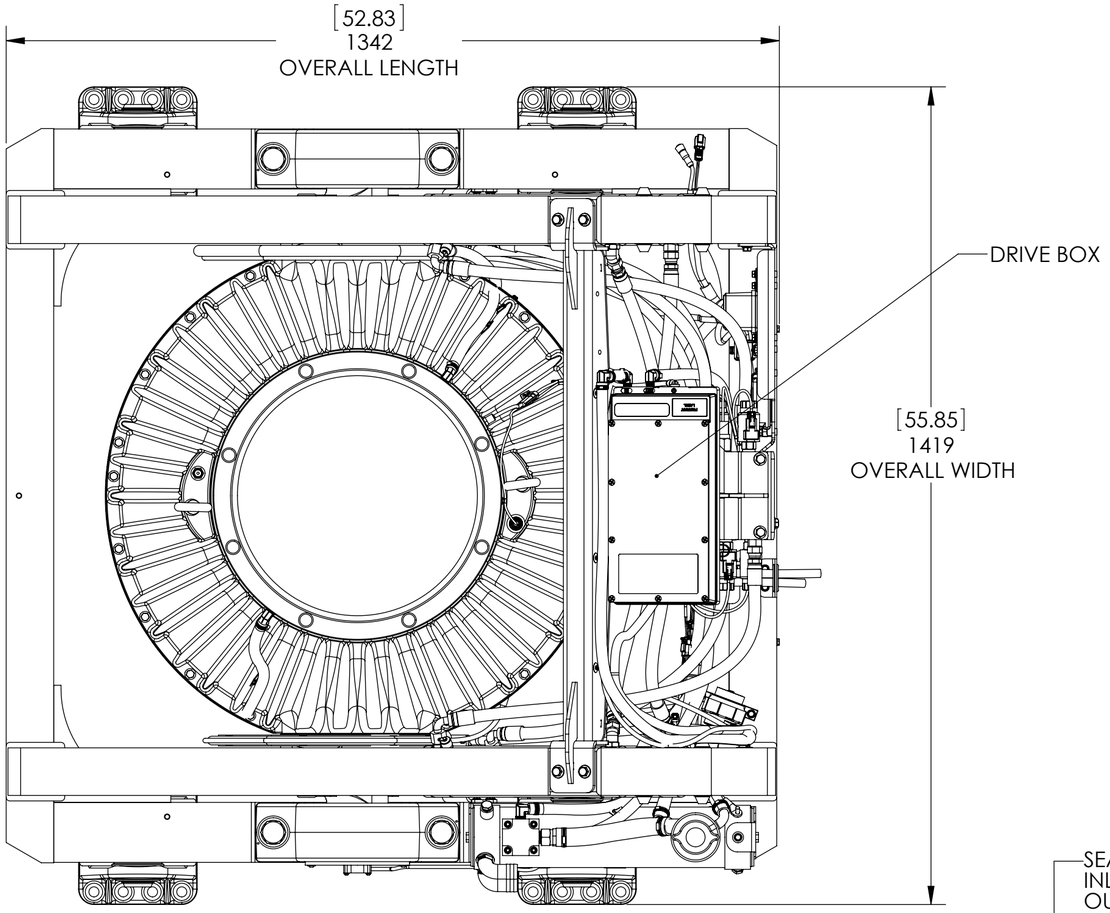
MATERIAL:

| | | |
|---|---|---|
| DRAWN: PRA | DATE: 16JUL2014 | |
| ENG APPR: BRD | DATE: 16JUL2014 | |
| PROD APPR: | DATE: | |

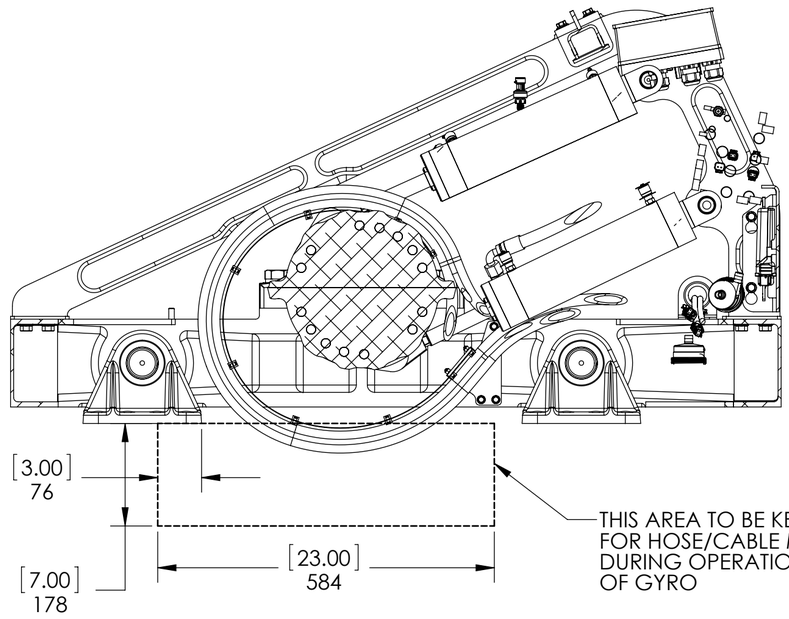
SEAKEEPER®
Seakeeper Inc. 44425 Pecan Court, Suite 151 California, MD 20619

NAME: SEAKEEPER 35 / 30HD GYRO, BOLT-IN INSTALLATION DETAILS

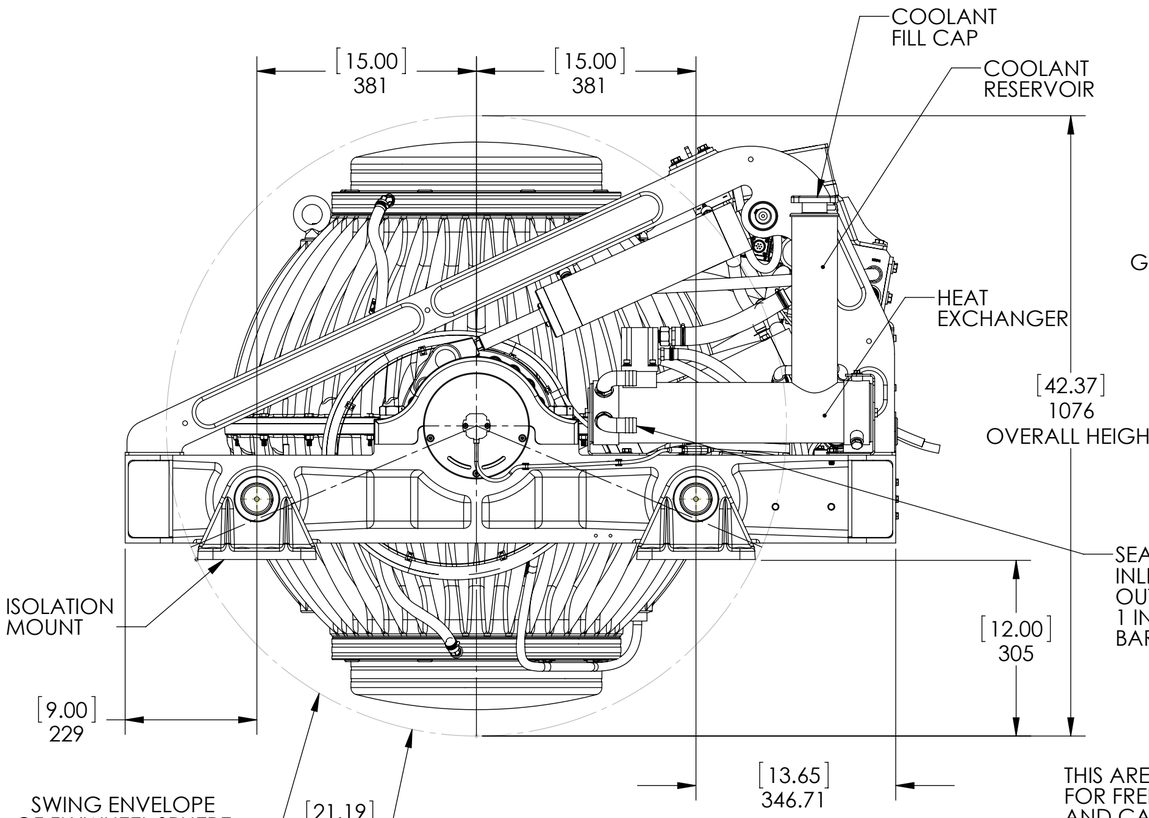
DWG NUMBER **90256** | REV. NO. **3** | SHEET NO. 1 OF 6



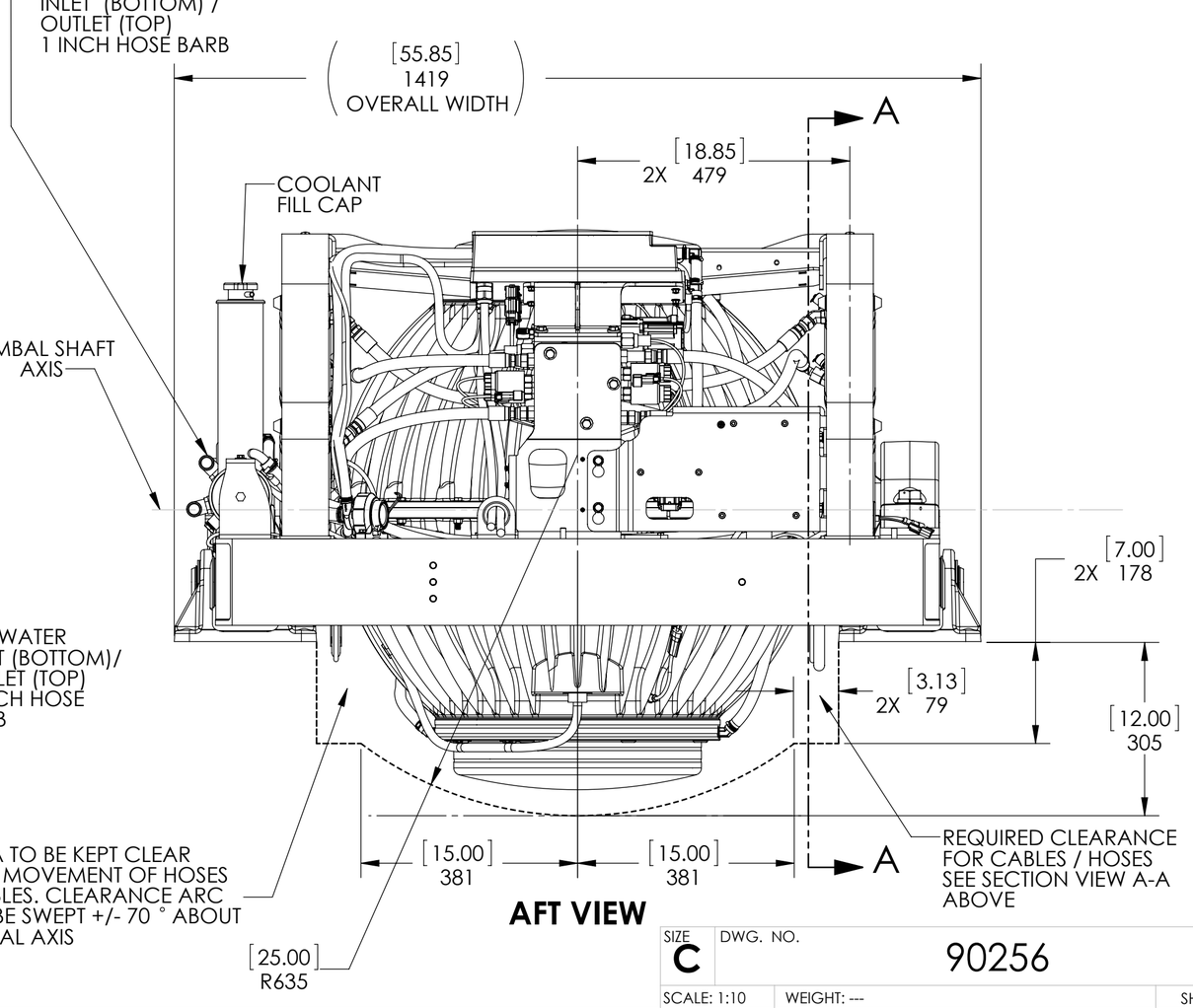

**TOP VIEW**




SECTION A-A
SCALE 1 : 8

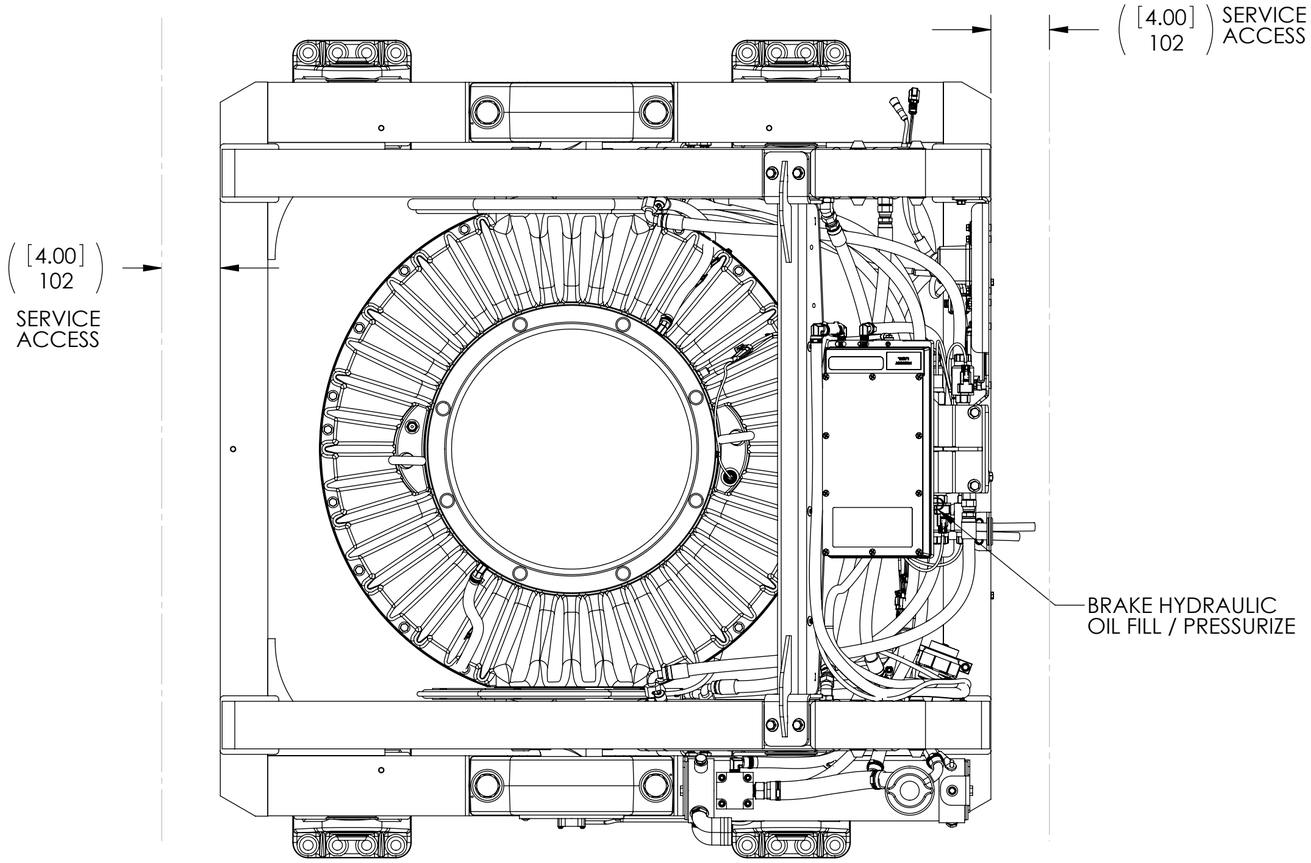


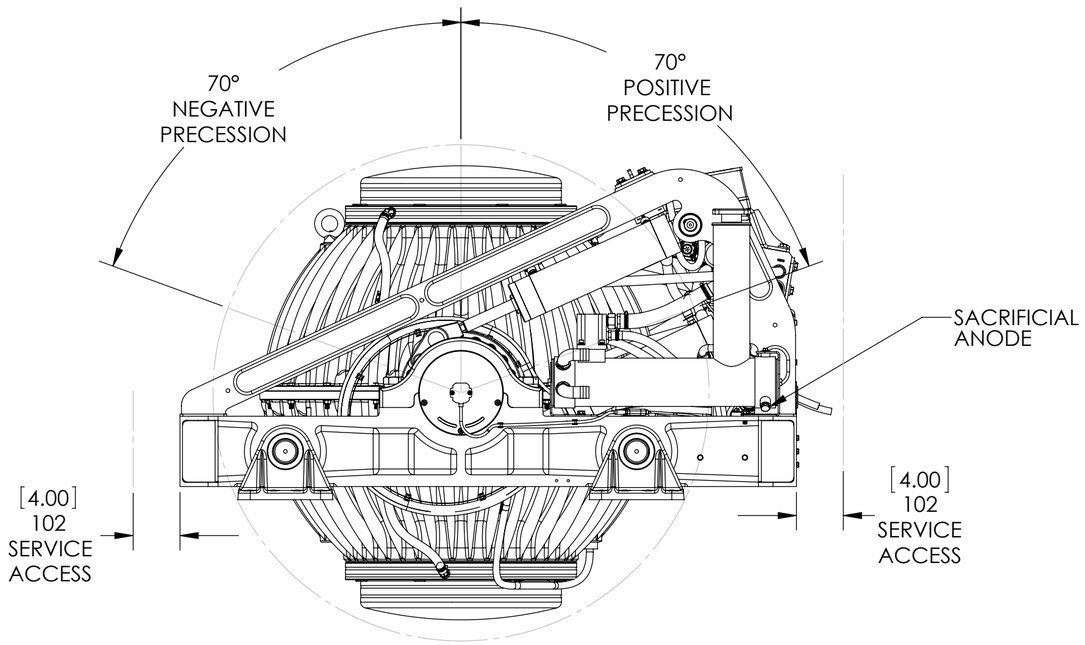

**PORT SIDE VIEW**

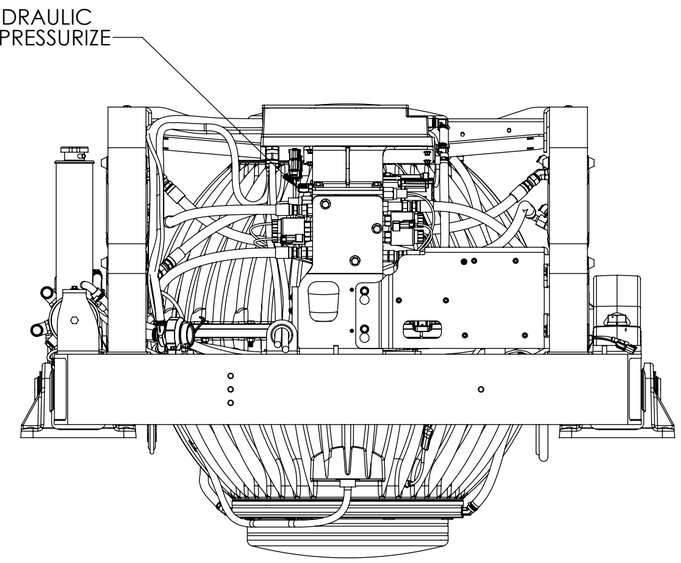



**AFT VIEW**

| SIZE | DWG. NO. | REV |
|---|---|---|
| C | 90256 | 3 |
| SCALE: 1:10 | WEIGHT: --- | SHEET 2 |

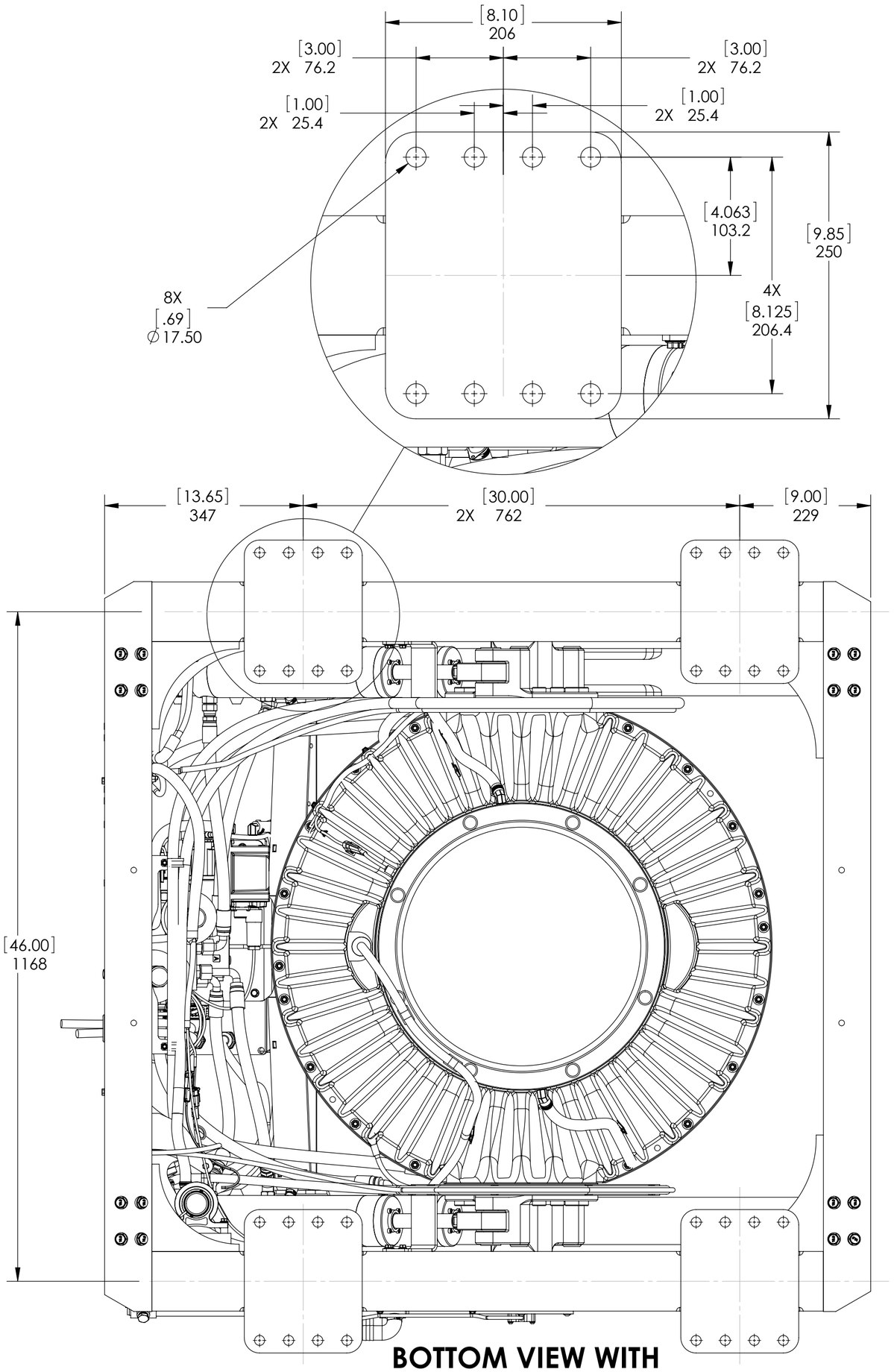


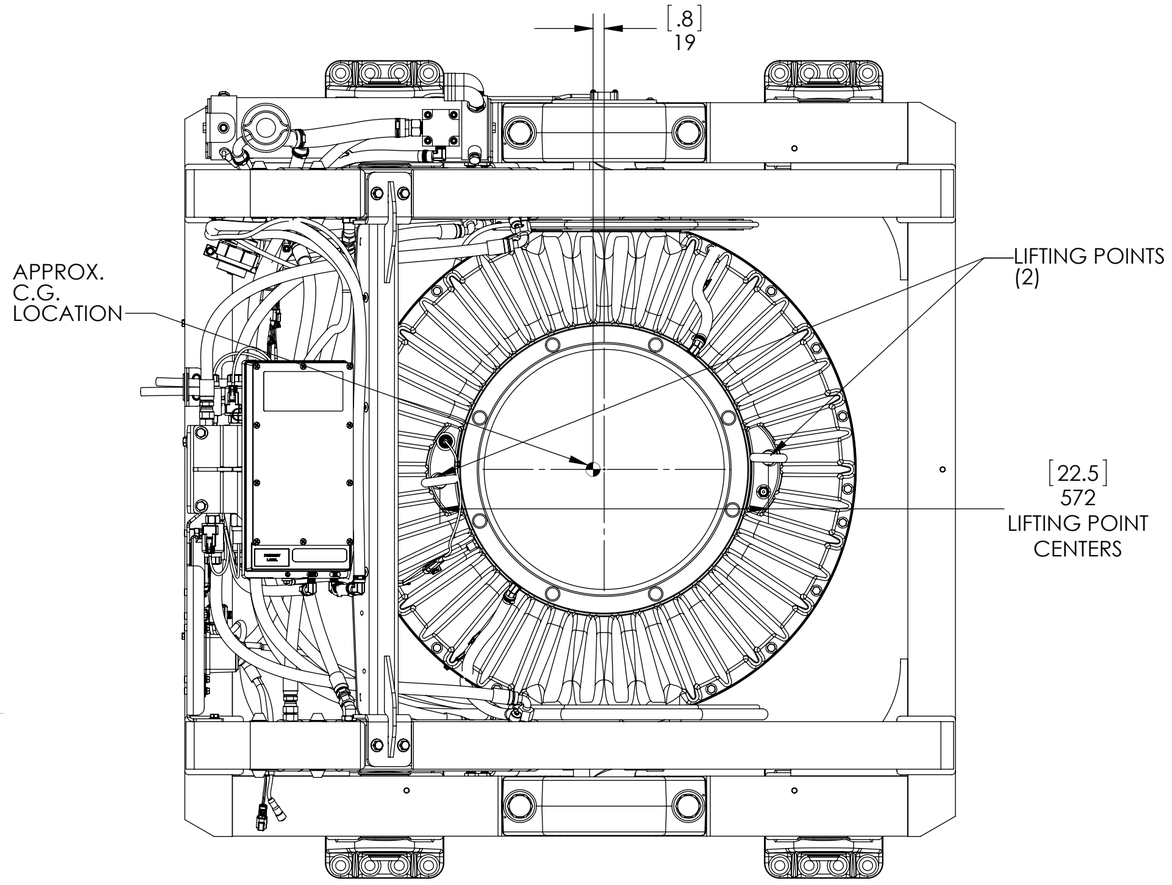



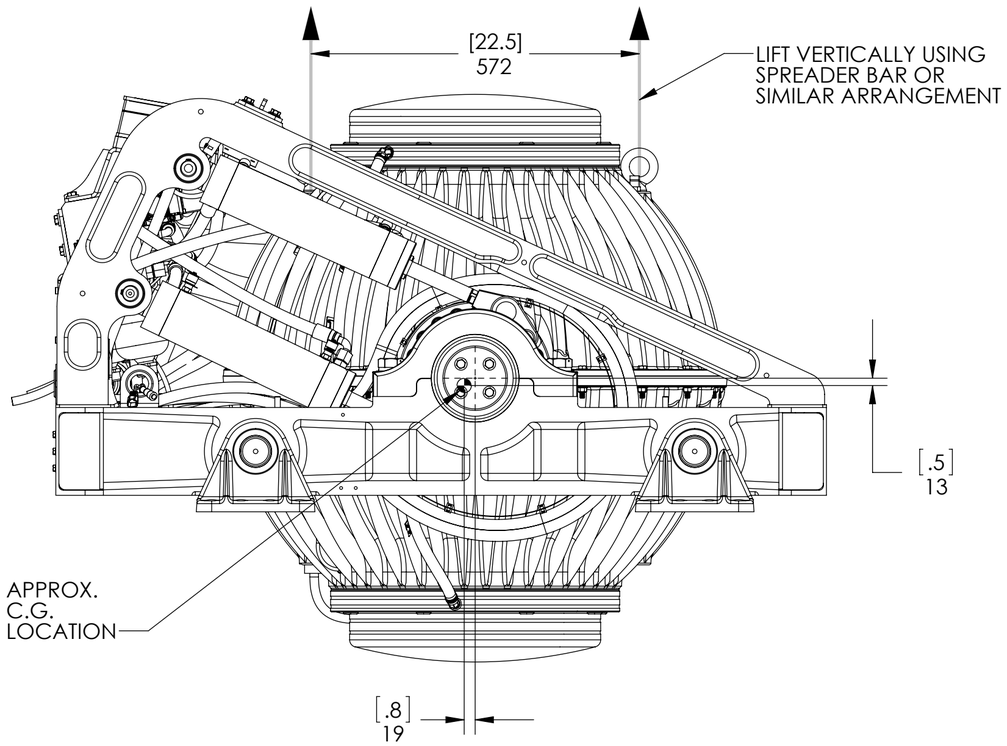

**VIEWS SHOWING RECOMMENDED TOOL CLEARANCES FOR EASE OF MAINTENANCE**

| SIZE | DWG. NO. | REV |
|---|---|---|
| C | 90256 | 3 |
| SCALE: 1:10 | WEIGHT: --- | SHEET 3 |

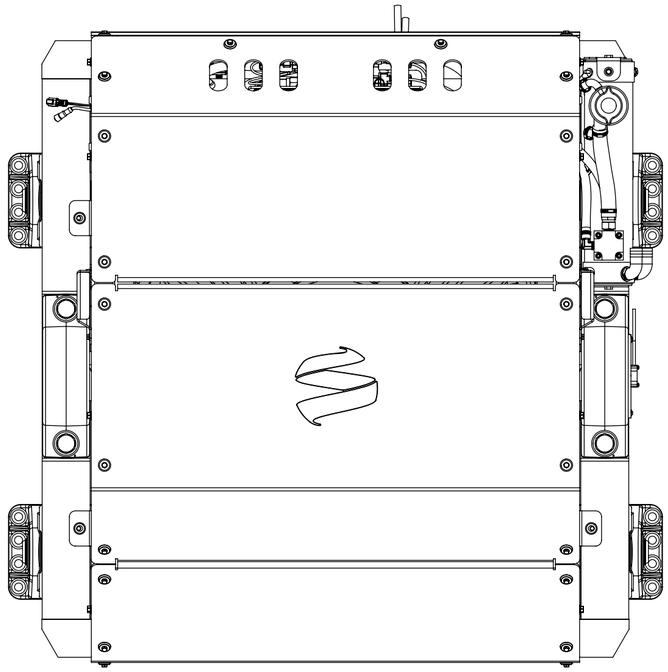


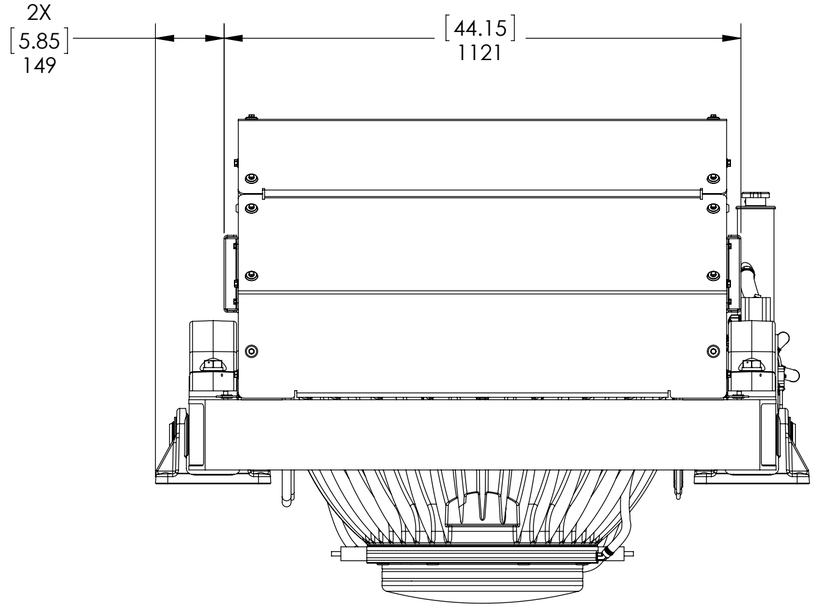

**BOTTOM VIEW WITH MOUNTING BOLT PATTERN**

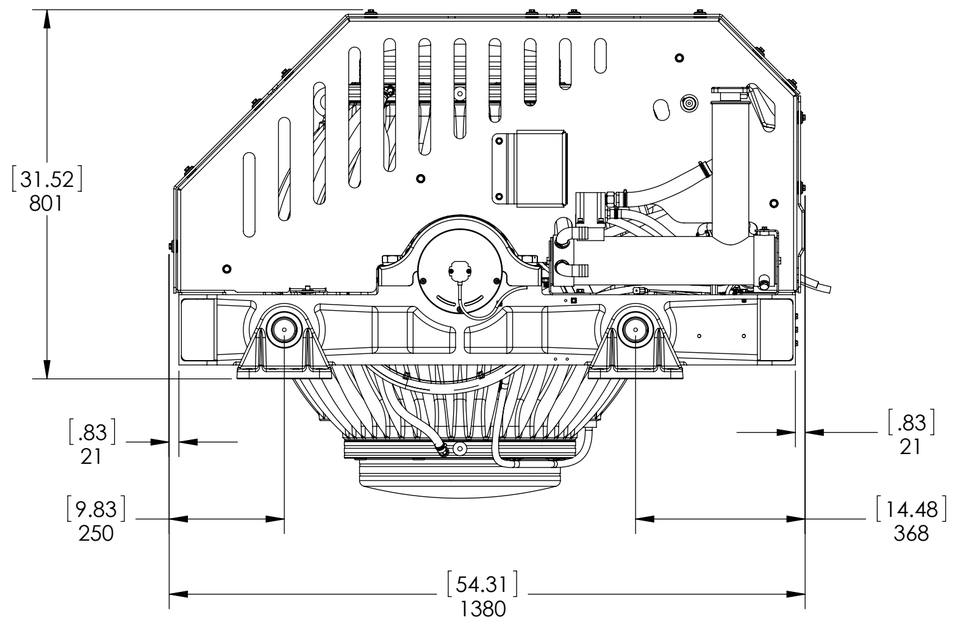



| SIZE | DWG. NO. | REV |
|---|---|---|
| C | 90256 | 3 |
| SCALE: 1:10 | WEIGHT: --- | SHEET 4 |






| SIZE | DWG. NO. | REV |
|---|---|---|
| C | 90256 | 3 |
| SCALE: 1:10 | WEIGHT: --- | SHEET 5 |

**GYRO LOADS FOR STRUCTURAL DESIGN:**

The Gyro is mounted in a foundation frame which incorporates semi-elastic anti-vibration mounts whose intent is to damp vibrations from being transmitted into the hull structure.

If the builder or designer wishes to bolt the four isolation mounts directly to hull structure specially designed to accept the gyro, the loads provided below would apply. This situation would most likely arise for a hull constructed of steel or aluminum.

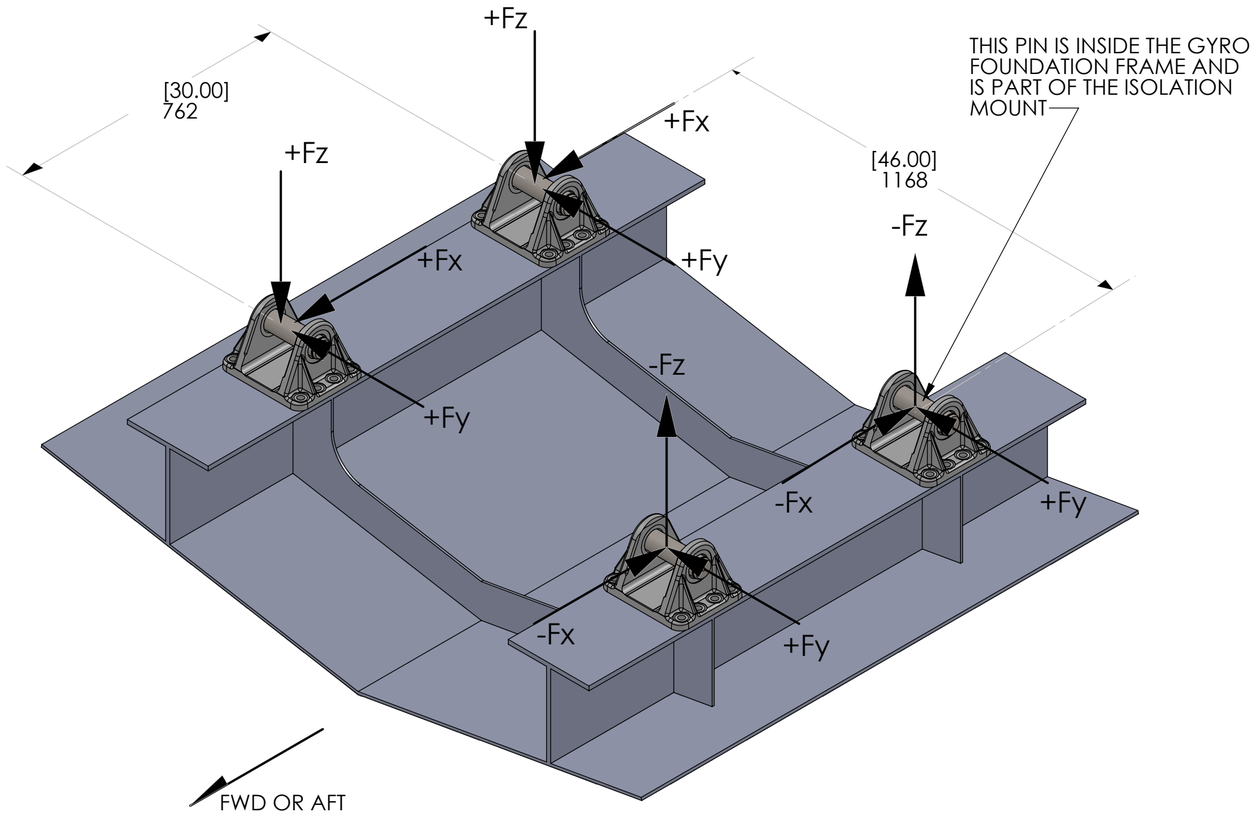
The Gyro generates pitch moments, roll moments, yaw moments and vertical and horizontal forces - the magnitude of which is controlled by the Gyro's active brake system. These Gyro generated forces and moments result in loads being applied at the four points, 105mm (4.13 in.) above the bottom of the isolation mounts as shown in the figure to the right.

The reference point is the center of the pin in each of the anti-vibration mounts. The resultant forces at these points are illustrated on the adjacent figure and values to be used for foundation design are summarized below:

Fz vertical = 41.25kN (9274 lb)
Fx Longitudinal = 13.46 kN (3026 lb)
Fy Lateral = 8.67 kN (1950 lb)

These forces should be considered to be:
- Acting simultaneously
- Fully reversing (i.e., acting in either direction)
- Repeated an infinite number of times

The boat builder or the gyro installer is responsible for designing the hull foundation to which the gyro is attached to accommodate the above forces and moments plus a reasonable Factory of Safety. A Factor of Safety of 3.0 (Margin of Safety of 2) is suggested.




BUILDER /INSTALLER LOCATES HOLES FOR FASTENERS USING FIXTURE NUMBER 90089 SUPPLIED BY SEAKEEPER.
THE GYRO FOUNDATION FRAME IS THEN FASTENED TO HULL STRUCTURE USING (8) M16 OR 5/8 INCH FASTENERS PER MOUNT.

| SIZE | DWG. NO. | REV |
|---|---|---|
| C | 90256 | 3 |
| SCALE: 1:10 | WEIGHT: | SHEET 6 |