REV NO.	ECN NO.	ZONE	DESCRIPTION	DATE	APPRVD.
2			DRAWING VIEWS ROTATED	8/10/2017	WHK

NOTES:
1) SEE REFERENCES 1 THROUGH 5 FOR RELATED INSTALLATION MANUAL AND ELECTRICAL / ELECTRONIC AND COOLING CIRCUIT DRAWINGS.

2) GYRO ASSEMBLY WEIGHT = 870LBS (395KG)

3) RAW WATER COOLING REQUIREMENT IS 15 LPM (4 GPM) MINIMUM AND 30 LPM (8 GPM) MAXIMUM CONTINUOUS FLOW. PROVIDED CONNECTIONS ARE 19mm (3/4" INCH) HOSE BARB. USE OF RAW WATER STRAINER IS REQUIRED.

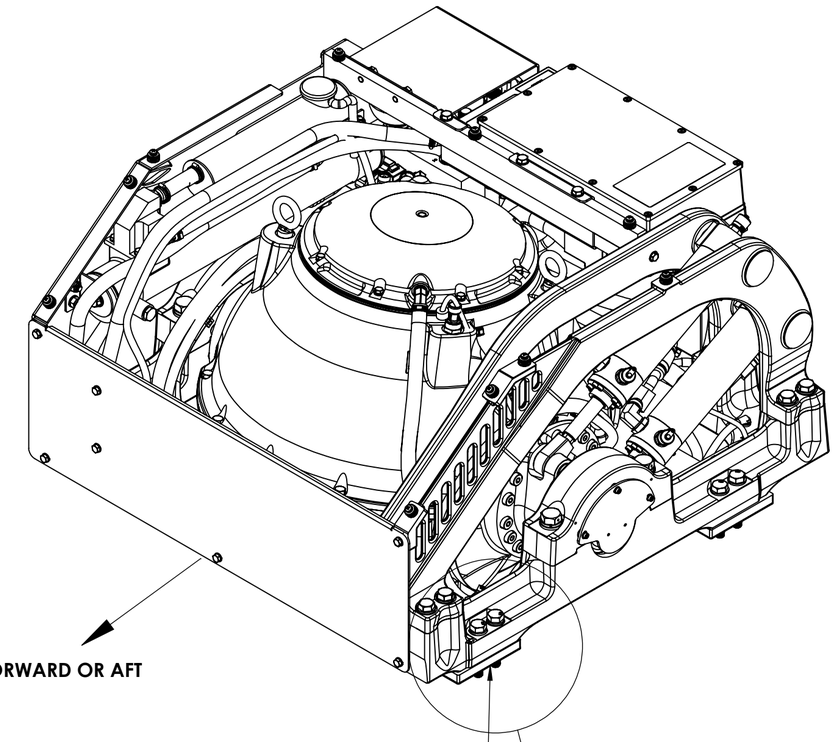
4) TWO LIFTING EYES ARE PROVIDED ON THE TOP OF THE GYRO SPHERE FOR USE WITH A CHAIN/SPREADER BAR (SEE SHEET 4) TOP COVER MUST BE REMOVED TO ACCESS LIFTING EYES.

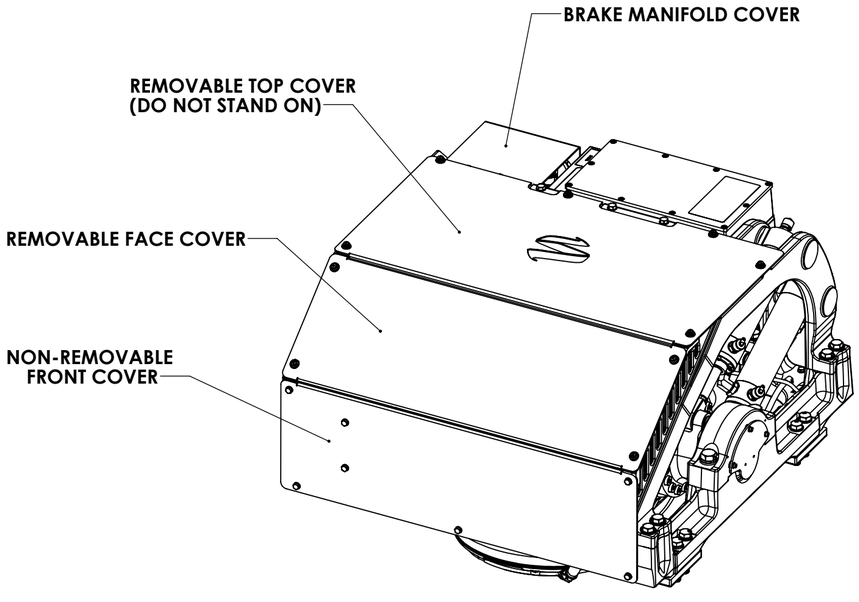
5) COVERS ARE PROVIDED TO PREVENT PERSONNEL OR EQUIPMENT ENTANGLEMENT WHILE GYRO IS IN OPERATION. THESE COVERS ARE NOT TO BE STOOD ON OR TO HAVE ANYTHING STORED ON TOP OF. SEAKEEPER RECOMMENDS THE COVERS TO ALWAYS BE IN PLACE DURING OPERATION.

6) THE GYRO MUST BE INSTALLED AFT OF AMIDSHIP TO MINIMIZE HIGH ACCELERATION LOADING DUE TO HULL/WAVE IMPACTS DURING OPERATION AT HIGH SPEED OR IN LARGE WAVES. GYRO DOES NOT NEED TO BE MOUNTED ON CENTERLINE OF KEEL. GYRO SUPPORT STRUCTURE MUST BE PARALLEL TO VESSEL WATERLINE.

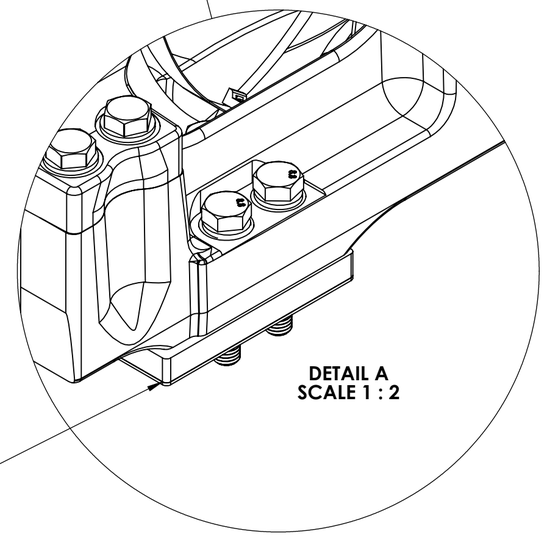
7) GYRO MAY BE INSTALLED FACING FORWARD OR AFT AS SHOWN. GYRO ORIENTATION SHOULD BE SELECTED TO PROVIDE THE MOST ACCESSABILITY FOR FUTURE SERVICE AND MAINTENANCE. INSTALLATION, START-UP, AND OPERATION IS THE SAME REGARDLESS OF GYRO ORIENTATION.

8) WHEN INSTALLING GYRO SEAKEEPER RECOMMENDS USING A BOLT HOLE LOCATION FIXTURE #90392 AVAILABLE FROM SEAKEEPER. THIS FIXTURE WILL PROPERLY SPACE AND LOCATE HOLES TO BE DRILLED IN HULL STRUCTURE FOR BOLT-IN OF GYRO FOUNDATION. SEE REFERENCE 5 FOR DETAILS OF INSTALLATION PROCESS.





SEE SHEET 5 FOR LOADING FORCES AND OTHER RECOMMENDATIONS FOR ATTACHING GYRO TO HULL STRUCTURE



WHEN ATTACHING GYRO DIRECTLY TO ANY STRUCTURE,
(4) FOUNDATION SPACERS (#11241) ARE PROVIDED TO GO BETWEEN GYRO FRAME AND HULL STRUCTURE. THESE WILL PROVIDE CLEARANCE FOR THE MOVING PARTS OF THE GYRO.
WHEN MOUTNING TO A NON-ALUMINUM, METAL STRUCTURE
(4) ISOLATION GASKETS (#11145) MUST BE USED BETWEEN THE FOUNDATION SPACER AND THE HULL STRUCTURE TO PREVENT DISSIMILAR METAL TO METAL CORROSION.
APPLY THIN FILM OF MARINE GRADE POLY-SULFIDE SEALANT TO ALL MATING SURFACES OF GASKET AND SPACER TO SEAL OUT SEAWATER.

REF.	DWG NO.	DWG. TITLE
1	90397	SEAKEEPER 6 COOLING WATER SCHEMATIC
2	90396	SEAKEEPER 6 CABLE BLOCK DIAGRAM
4	90392	SEAKEEPER 6 INSTALLATION FIXTURE KIT
5	90402	SEAKEEPER 6 INSTALLATION MANUAL
3	90408	TOUCH DISPLAY AND MOUNTING DETAILS

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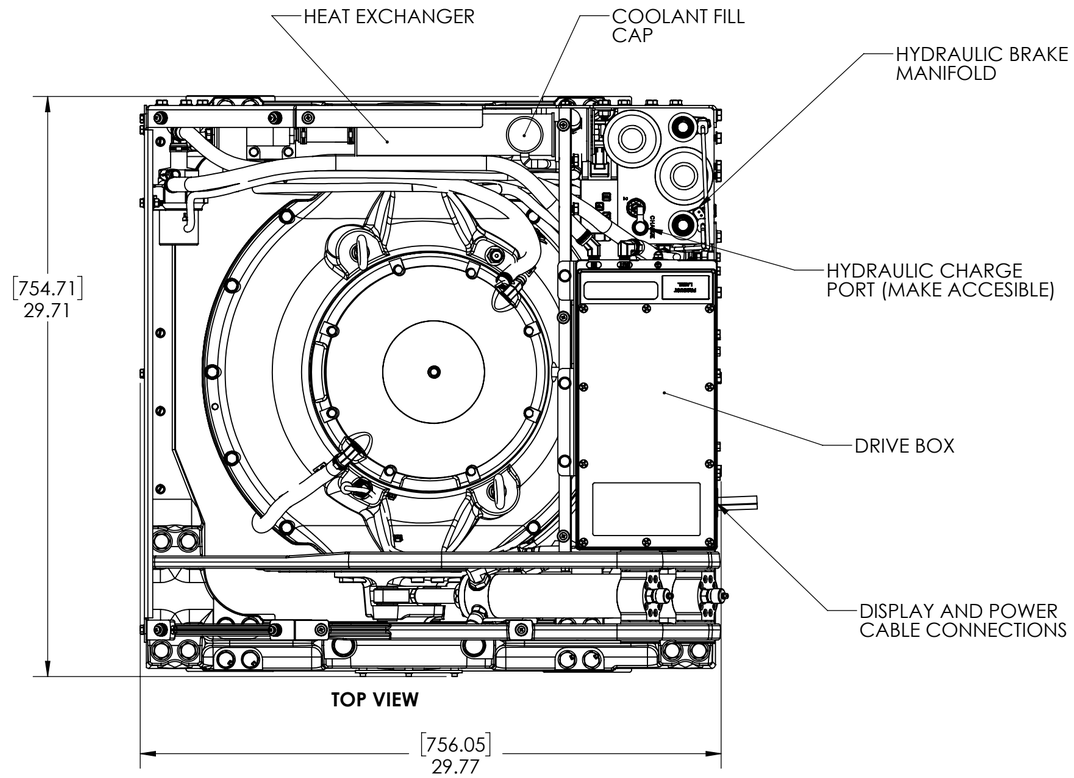
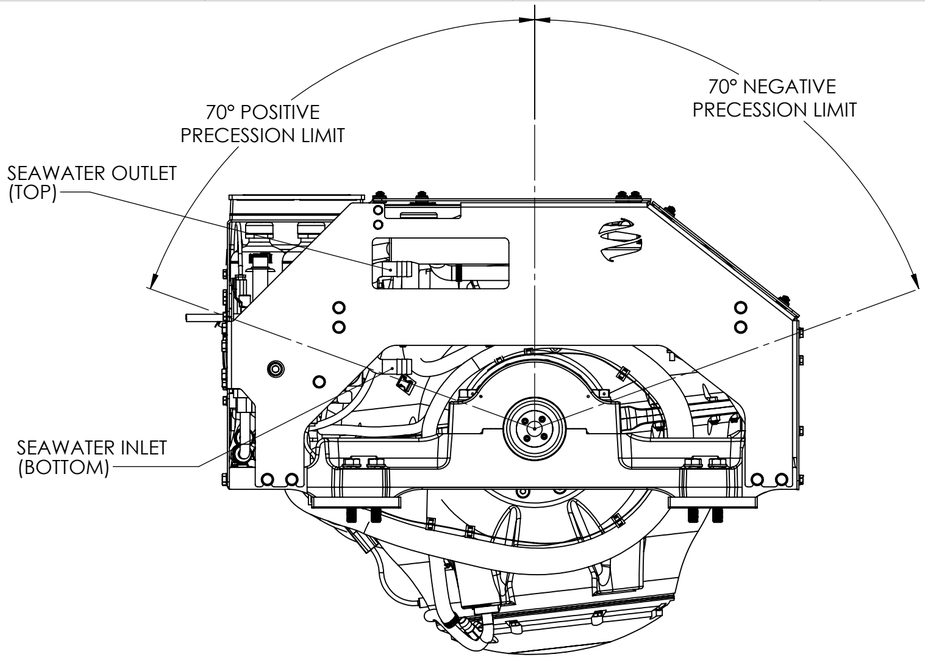
WEIGHT - LBS : ---
MATERIAL: ---
DRAWN: WHK DATE: 1JUL2016
ENG APPR: DATE:
PROD APPR: DATE:

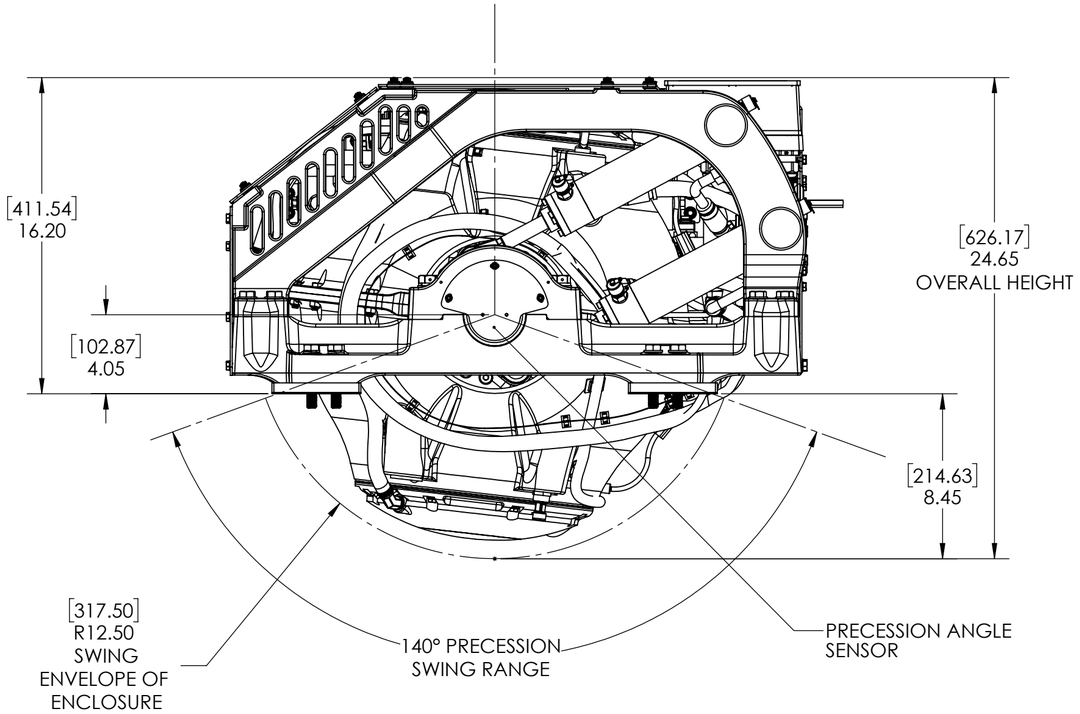
NAME: SEAKEEPER 6 INSTALLATION DETAILS - BOLT-IN METHOD
DWG NUMBER 90398 | REV. NO. 2 | SHEET NO. 1 OF 5

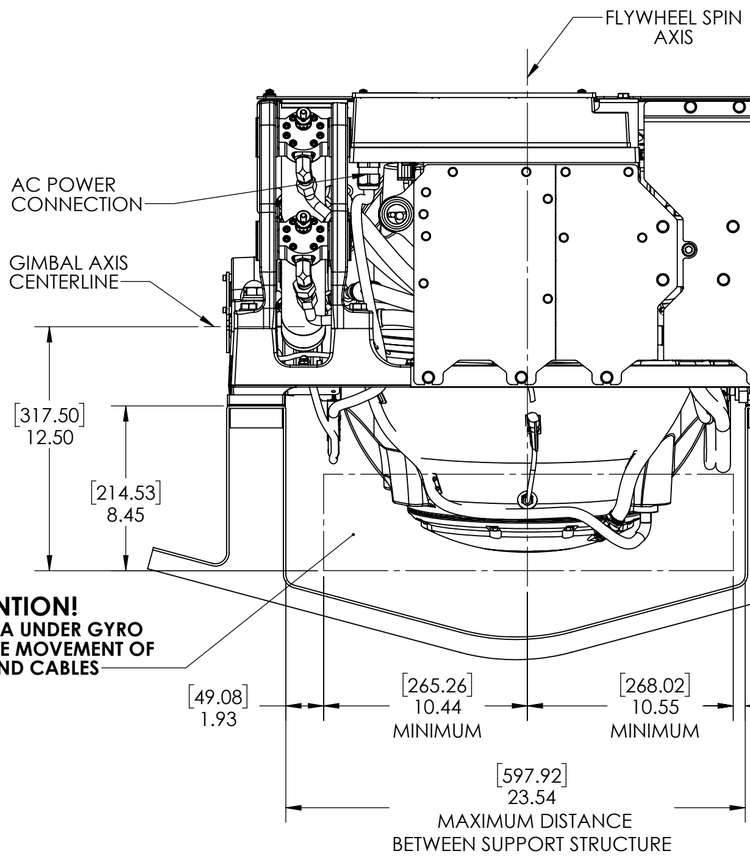


TOP VIEW



NON-BRAKE SIDE VIEW





ATTENTION!
KEEP THIS AREA UNDER GYRO CLEAR FOR FREE MOVEMENT OF HOSES AND CABLES

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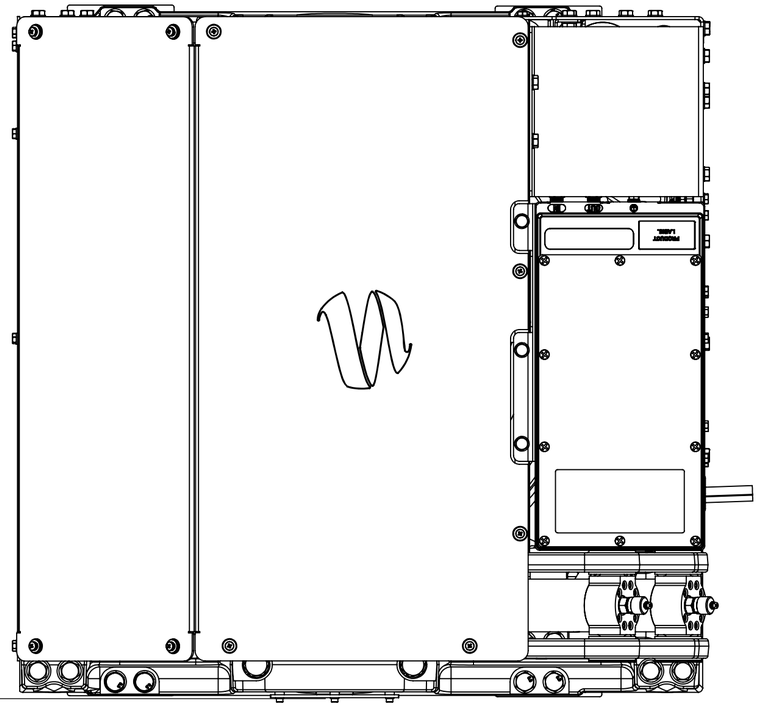
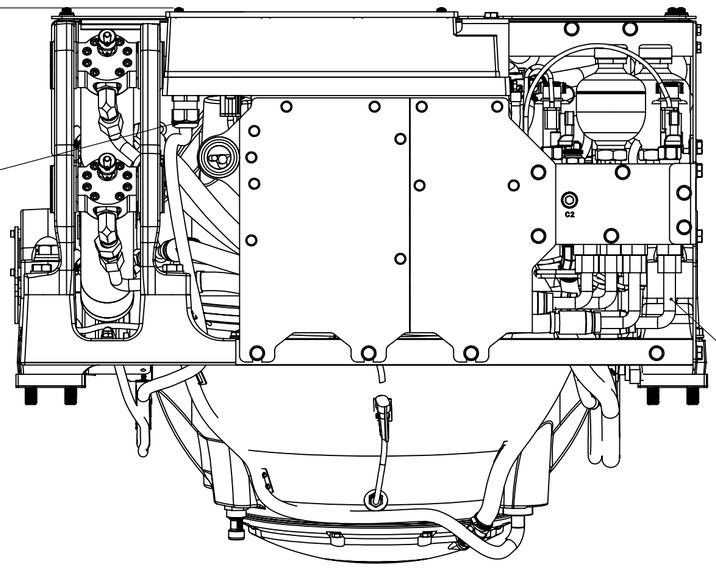
	PROD APPR:	DATE:	
	DWG NUMBER: 90398	REV. NO.: 2	SHEET NO.: 2 OF 5

VIEWS SHOWING REQUIRED CLEARANCES AROUND GYRO FOR USE OF HAND TOOLS, EASE OF MAINTENANCE, AND INSTALLATION.



[101.60]
4.00
MINIMUM REQUIRED
DISTANCE FOR TOOL AND
SERVICE CLEARANCES.
BOTH SIDES

[76.20]
3.00
MINIMUM REQUIRED
DISTANCE FOR TOOL AND
SERVICE CLEARANCES.

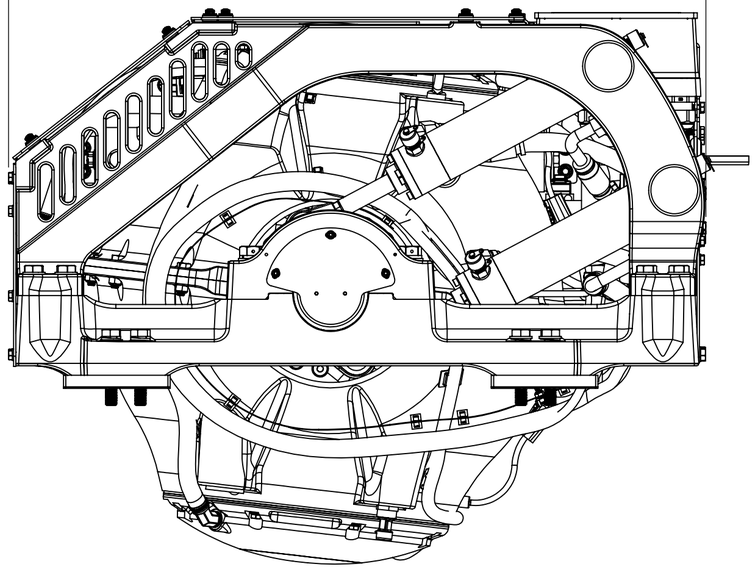


AC POWER
CONNECTION

HYDRAULIC HOSE
CONNECTIONS MUST
BE ACCESSIBLE

[50.80]
2.00
MINIMUM REQUIRED
DISTANCE FOR TOOL AND
SERVICE CLEARANCES.

[101.60]
4.00
MINIMUM REQUIRED
DISTANCE FOR TOOL AND
SERVICE CLEARANCES.



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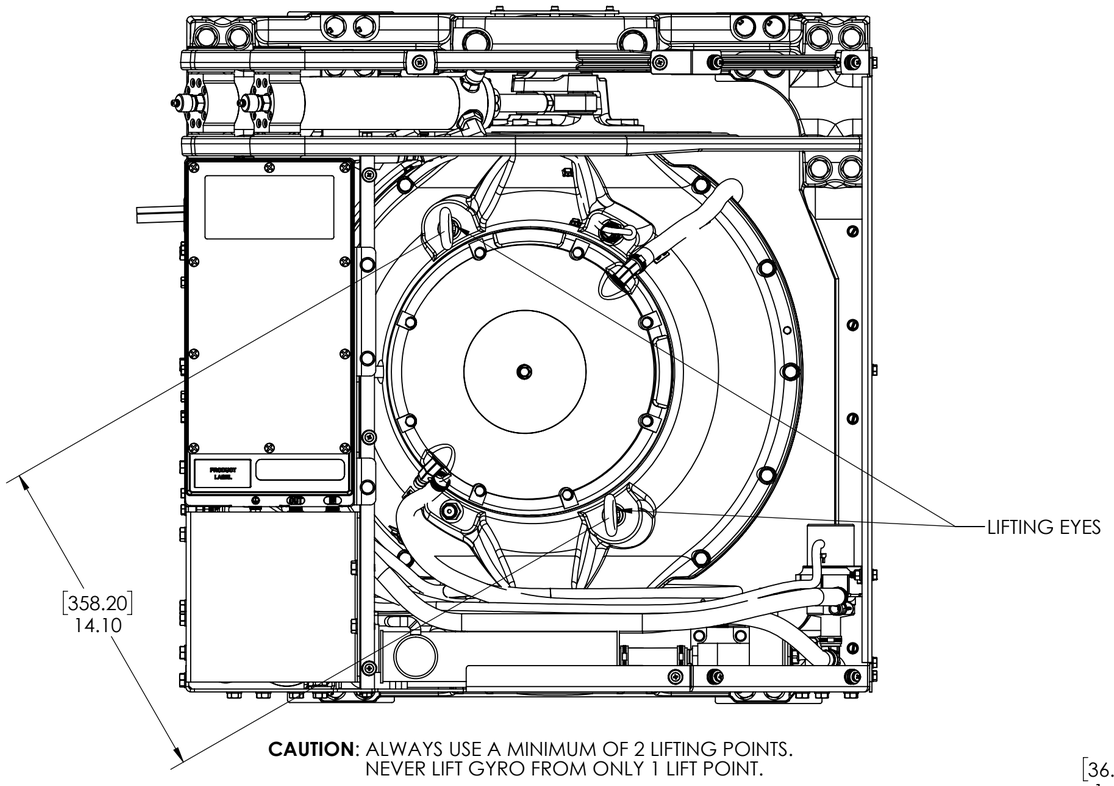
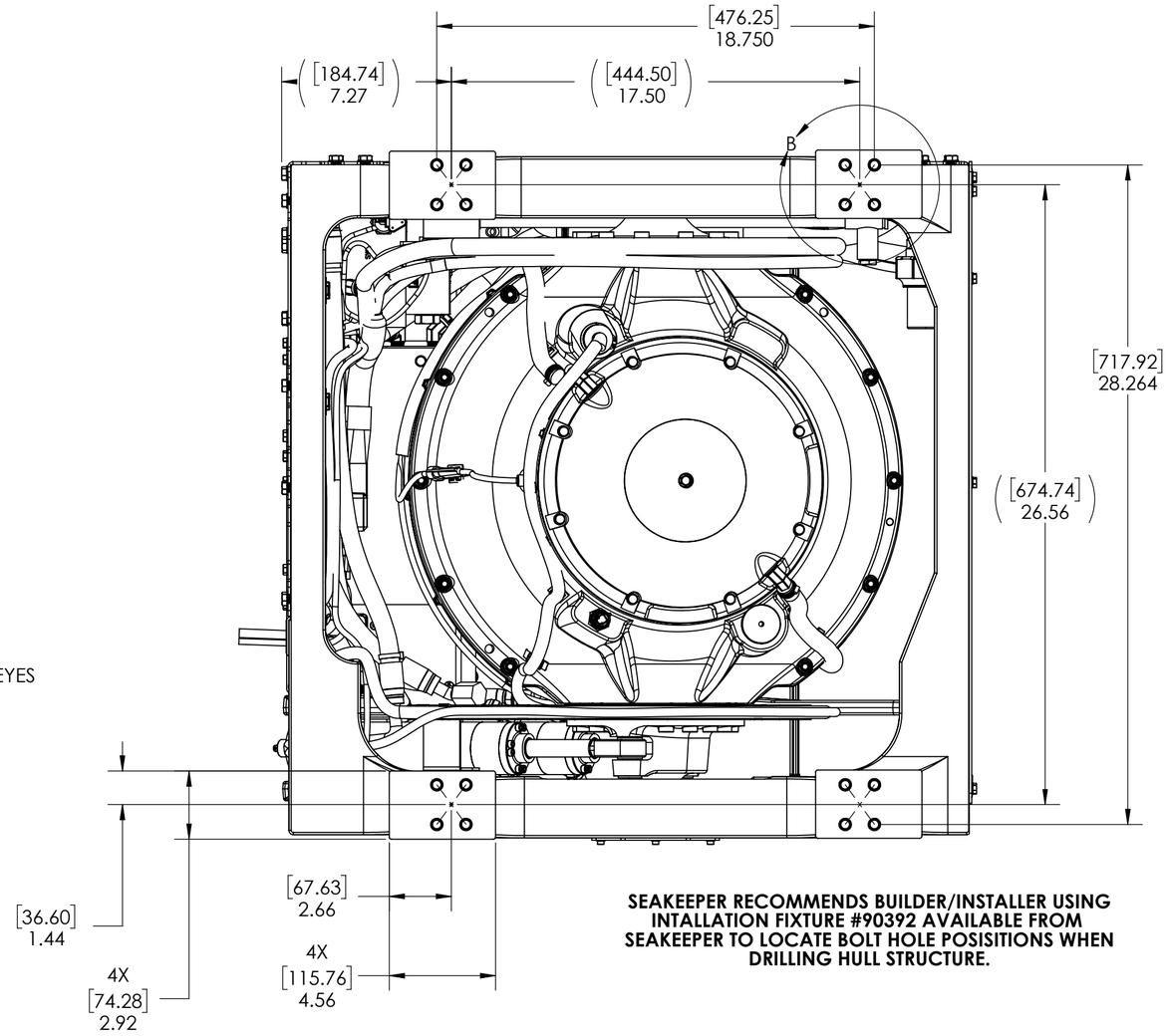
	PROD APPR:	DATE:	
	DWG NUMBER 90398	REV. NO. 2	SHEET NO. 3 OF 5

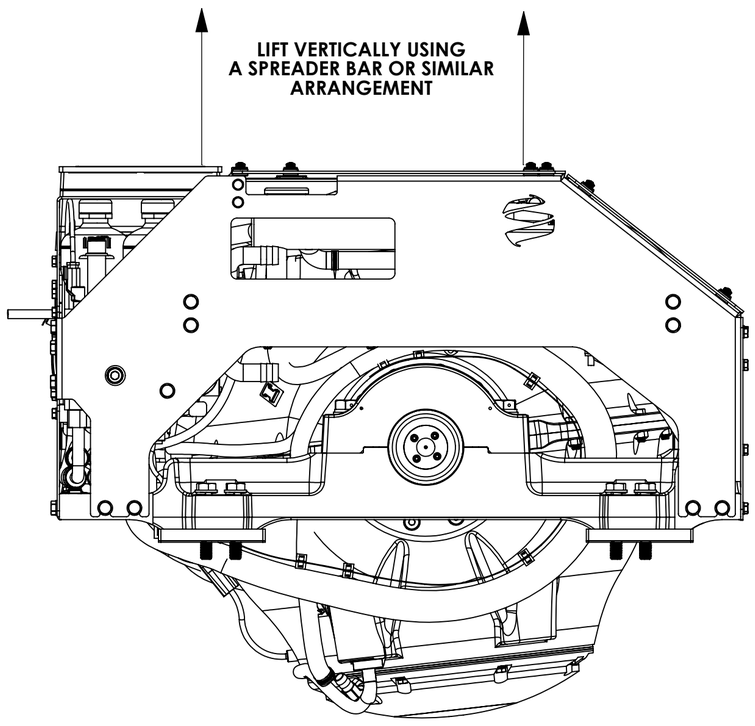


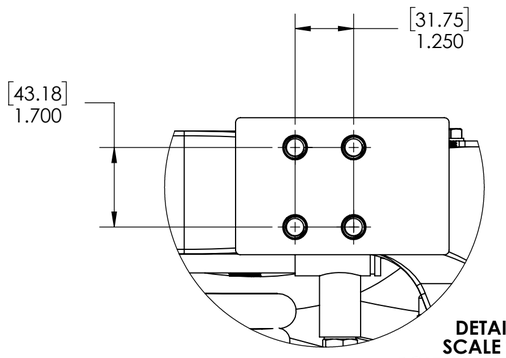
CAUTION: ALWAYS USE A MINIMUM OF 2 LIFTING POINTS.
NEVER LIFT GYRO FROM ONLY 1 LIFT POINT.



SEAKEEPER RECOMMENDS BUILDER/INSTALLER USING INTALLATION FIXTURE #90392 AVAILABLE FROM SEAKEEPER TO LOCATE BOLT HOLE POSISITIONS WHEN DRILLING HULL STRUCTURE.

LIFT VERTICALLY USING A SPREADER BAR OR SIMILAR ARRANGEMENT





DETAIL B
SCALE 2 : 5
BOLT PATTERN DETAIL
4 MOUNTING FEET

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	PROD APPR:	DATE:	REV. NO.: 2
			SHEET NO.: 4 OF 5

GYRO LOADS FOR HULL STRUCTURE DESIGN :

THE GYRO IS MOUNTED IN A RIGID FOUNDATION FRAME WHICH INCORPORATES SEMI-ELASTIC ANTI-VIBRATION ISOLATORS ENCASING THE GIMBAL BEARINGS THAT DAMPEN VIBRATIONS THAT COULD TRANSMIT INTO THE HULL STRUCTURE.

IF THE GYRO FOUNDATION IS BOLTED TO A NON-ALUMINUM, METAL HULL STRUCTURE AN ISOLATION GASKET MUST BE USED BETWEEN THE ALUMINUM FRAME AND THE HULL STRUCTURE SURFACE. SEAKEEPER ISOLATION GASKETS ARE INCLUDED IN THE SEAKEEPER 6 BOLT-IN KIT P/N: 90400. THE BOLTING SURFACE OF THE HULL STRUCTURE MUST BE FLAT SO THAT THE 4 CONTACT POINTS OF THE GYRO FRAME ARE TOUCHING THE HULL STRUCTURE SIMULTANEOUSLY WITH NO NOTICEABLE ROCKING.
THE BOAT BUILDER OR GYRO INSTALLER IS RESPONSIBLE TO DESIGN AND BUILD A HULL STRUCTURE THAT WILL ENSURE A FLAT BOLT SURFACE AS TO AVOID ANY INDUCED STRESSES INTO THE FRAME CASTING ONCE BOLTED DOWN. SEAKEEPER RECOMMENDS A SURFACE FLATNESS WITHIN 1.5 MILLIMETERS.

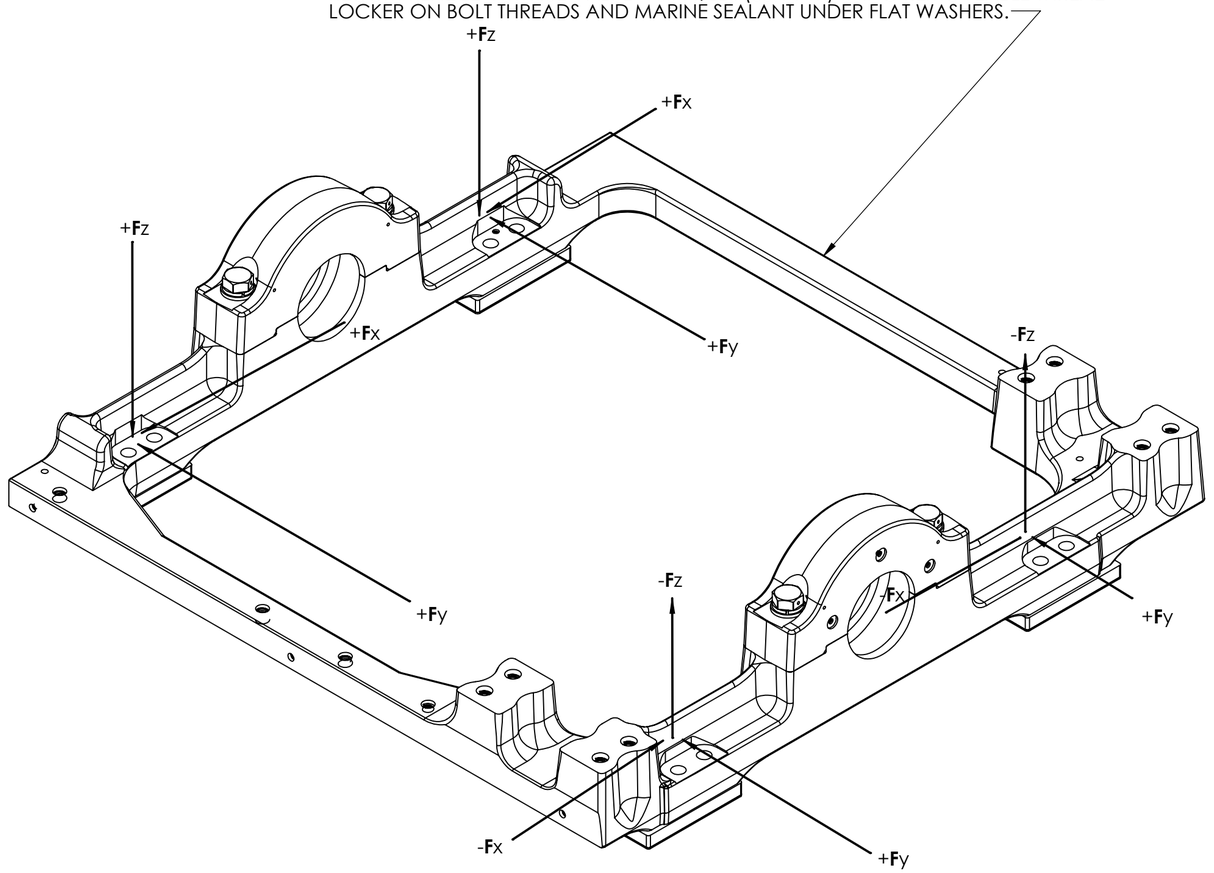
THE GYRO GENERATES PITCH MOMENTS, ROLL MOMENTS, YAW MOMENTS, AND VERTICAL AND HORIZONTAL FORCES - THE MAGNITUDE OF WHICH IS CONTROLLED BY THE GYRO'S ACTIVE BRAKE SYSTEM. THESE GYRO GENERATED FORCES AND MOMENTS RESULT IN LOADS BEING APPLIED AT THE FOUR POINTS WHERE THE GYRO FRAME BOLTS TO THE TOP FACE OF THE HULL STRUCTURE. THE RESULTANT FORCES AT THESE POINTS ARE ILLUSTRATED ON THE ADJACENT FIGURE AND THE VALUES TO BE USED FOR HULL STRUCTURE DESIGN ARE SUMMARIZED BELOW:

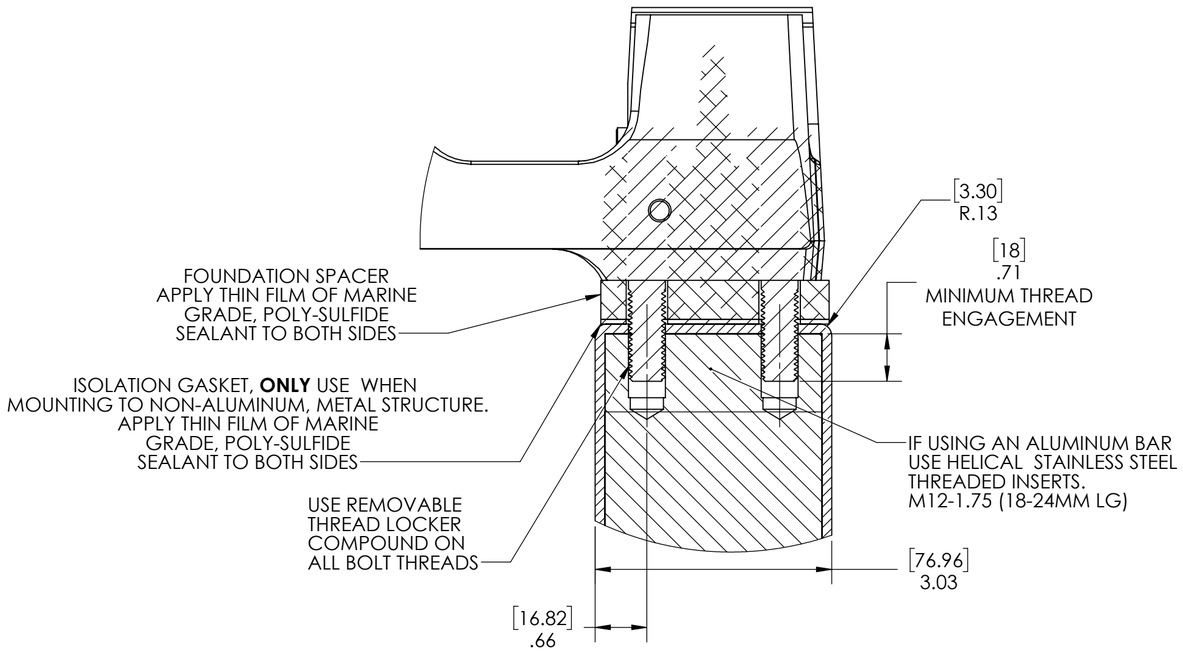
VERTICAL FORCE (Fz) =3820 lbs (17.0 kN)
LONGITUDINAL FORCE (Fx) = 2335 lbs (10.4 kN)
LATERAL FORCE (Fy) = 209 lbs (0.93 kN)

THESE FORCES SHOULD BE CONSIDERED TO BE ACTING SIMULTANEOUSLY, FULLY REVERSING IN BOTH DIRECTIONS, AND WILL REPEAT AN INFINITE NUMBER OF TIMES. THESE FORCES DO NOT INCLUDE VESSEL MOTION ACCELERATIONS INCLUDING VERTICAL SLAM LOADS WHICH CAN BE HIGH FOR HIGHER SPEED VESSELS.

THE BOAT BUILDER OR THE GYRO INSTALLER IS RESPONSIBLE FOR DESIGNING THE HULL STRUCTURE TO WHICH THE GYRO IS ATTACHED TO ACCOMMODATE THE ABOVE FORCES AND MOMENTS PLUS A REASONABLE FACTOR OF SAFETY. SEAKEEPER SUGGESTS A SAFETY FACTOR OF 3.0 (YIELDING A SAFETY MARGIN OF 2.0). THIS FACTOR OF SAFETY MAY NEED TO BE INCREASED DEPENDING ON THE OPERATIONAL PROFILE OF THE VESSEL IN WHICH THE GYRO IS TO BE INSTALLED.

THE GYRO FRAME IS BOLTED TO HULL STRUCTURE USING M12X1.75 ZINC PLTD STEEL, HEX HEAD CAP SCREWS, GRADE 8.8, 16 PLACES. SEAKEEPER PROVIDES THIS HARDWARE AT A STANDARD LENGTH OF 75mm FOR MOST FIBERGLASS HULL APPLICATIONS. ANY OTHER APPLICATIONS THAT REQUIRE LONGER HARDWARE DUE TO FIBERGLASS THICKNESS, MUST BE PROVIDED BY INSTALLER. RECOMMENDED TORQUE VALUE = 65 FT/LBS (88.1 Nm) USING REMOVEABLE THREAD LOCKER ON BOLT THREADS AND MARINE SEALANT UNDER FLAT WASHERS.





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