SEAKEEPER LOADS FOR HULL STRUCTURE DESIGN:

The boat builder or Seakeeper 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. The Seakeeper gyro generates pitch moments, roll moments, yaw moments, and vertical and horizontal forces - the magnitude of which is controlled by the Seakeeper's active brake system. These gyro generated forces and moments result in loads being applied at the four points where the Seakeeper frame bolts or bonds 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 in Table 1.

TABLE 1: SEAKEEPER RESULTANT FORCES BY MODEL

	Seakeeper 1	Seakeeper 2	Seakeeper 3	Seakeeper 5	Seakeeper 6	Seakeeper 9	Seakeeper 16	Seakeeper 18	Seakeeper 26	Seakeeper 35
Vertical Force (Fz)	1515 lbs* (6.74 kN)*	1459 lbs (6.49 kN)	1934 lbs (8.60 kN)	3820 lbs (17.0 kN)	3820 lbs (17.0 kN)	3842 lbs (17.09 kN)	5450 lbs (24.24 kN)	5965 lbs (26.53 kN)	8068 lbs (35.89 kN)	9274 lbs (41.25 kN)
Longituidnal Force (Fx)	2,248 lbs* (10.0 kN)*	963 lbs (4.3 kN)	1224 lbs (5.44 kN)	2335 lbs (10.4 kN)	2335 lbs (10.4 kN)	2280 lbs (10.14 kN)	2999 lbs (13.34 kN)	3409 lbs (15.16 kN)	3056 lbs (13.59 kN)	3026 lbs (13.46 kN)
Laeral Force (Fy)	1697 lbs* (7.55 kN)*	100 lbs (0.45 kN)	150 lbs (0.67 kN)	209 lbs (0.93 kN)	209 lbs (0.93 kN)	303 lbs (1.348 kN)	500 lbs (2.22 kN)	500 lbs (2.22 kN)	1587 lbs (7.02 kN)	1950 lbs (8.67 kN)

*The Seakeeper 1 Forces is calculated with +/-6G acceleration in all directions.

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.