

## Precision Planetary Gearheads - GH Series



### PRECISION PLANETARY GEARHEADS

**MAGTORQ** introduces a wide range of GH series precision planetary gearheads for motion and position control mechanisms for industrial automation systems, robotics, machine tools, medical equipments, packaging machines, and host of other applications requiring high performance servo drive systems.

Designed by our own R&D team, development of GH series precision planetary gearheads is a result of our decade long experience in manufacturing variety of planetary gear reducers, and customized gear transmissions for demanding & critical applications in Material Handling Equipment, Mining, Sugar, Paper, Steel, Power Plants, Wind Mills, Defence, Pharmaceuticals, etc.

Servo drive system demands fast dynamic response, changing speeds, precise position & motion control, large number of starts / stops, and high torque to weight ratio components. **MAGTORQ** precision planetary gearheads are designed to meet these demanding requirements. With 8 Frame sizes to choose from and each frame size having 15 gear ratios, from 4:1 to 125:1, **MAGTORQ** GH series meets the requirements of the most of the general purpose servo applications.

## SALIENT FEATURES

**High torque to weight ratio** Single piece design concept for annulus-housing configuration results in at least 200% increase in torque to weight ratio of MAGTORQ GH Series planetary gearheads, and hence lower inertia as compared to the conventional gearheads.

**Low Backlash** - Backlash-free operation is ideally desirable in automation. While the total elimination of backlash is practically impossible in toothed gear transmissions, it is possible to reduce backlash to a minimum through close control of the dimensions of the gear teeth. MAGTORQ GH Series planetary gearheads are specified for backlash of better than 10 arcmin. for standard models and better than 5 arcmin. for precision class models.

**High cyclic load carrying capacity** MAGTORQ GH Series planetary gearheads are designed to deliver the rated acceleration torque upto 900 cycles per hour. For more frequent cycles or for applications having frequent reversals of direction of rotation, de-rating of the gearheads is recommended.

**High peak torque capacity** - MAGTORQ GH Series planetary gearheads are designed to withstand the rated peak torque for maximum 1000 cycles during their service life. For applications needing higher cycles of peak torque higher frame size is required to be selected.

**High Torsional Stiffness** Faster accelerations & decelerations, changing speeds, large number of start-stops & reversals, etc, which are typical requirements of most of the servo systems, give rise to undesirable oscillations in drive & driven mechanisms affecting the positional accuracies. High torsional stiffness of the drive mechanism reduces such undesirable oscillations.

MAGTORQ GH Series planetary gearheads have larger shafts, and unique gear teeth design with tight tolerances for obtaining higher torsional stiffness than equivalent standard gear reducers.

**Precise Positioning** Lower backlash and higher torsional stiffness of MAGTORQ GH series planetary gearheads make them suitable for applications requiring precise positioning.

**Long-life Lubrication** MAGTORQ GH Series planetary gearheads come with factory-filled synthetic lubricant for longer service life, eliminating frequent re-lubrications and completely avoids messy oil leakages. Planetary configuration, an inherently balanced system, automatically redistributes the lubricant to all the gear meshes and bearings.

**Easy Motor Mounting** Self-supported hollow input shaft and tailor-made input flange enable direct mounting of specific motor on the gearhead, eliminating need of external coupling.

**Square shaped Body & Mounting Flanges** MAGTORQ GH Series planetary gearheads come with square shaped housing for easy and esthetic fitment of the square shaped servomotors.

**Quiet operation** Ground and profile corrected gears reduce the noise level of MAGTORQ GH Series planetary gearheads to below 72dB under normal running conditions.

**High radial load carrying capacity** Use of larger diameter output shaft & its bearings, wider bearing span through straddle mounting of the output member, etc., enhances the radial load carrying capacity of MAGTORQ GH Series planetary gearheads by over 300% as compared to conventional gearheads.

## Wide range of reduction ratios

|      |      |      |       |       |
|------|------|------|-------|-------|
| 4:1  | 5:1  | 12:1 | 15:1  | 16:1  |
| 20:1 | 25:1 | 36:1 | 45:1  | 48:1  |
| 60:1 | 75:1 | 80:1 | 100:1 | 125:1 |

## SELECTION PROCEDURE :

Following points give the general guidelines for the selection of MAGTORQ GH Series planetary gearheads on the basis of the dimensions and performance characteristics of the servo motors that are being used with them. Please refer to the performance data table and proceed as detailed below.

**Motor Dimensions :** Check motor's mounting flange PCD and select GH Series Gearhead of equal or higher PCD. In case of square shaped servo motor, check the square dimensions of the servo motor & select the GH Series Gearhead having equal or next higher frame size. For example servomotor having square dimensions upto 90mm sq. MAGTORQ Gearhead model GH90 can be used, which has 90 mm sq. body dimensions.

**Reduction Ratio :** Select the reduction ratio that is required for the above table. MAGTORQ GH series gearheads are rated for the maximum input speed of 3000RPM. For optimum size of the servomotor it is recommended to select the gearhead having reduction ratio such that maximum speed of the servomotor matches with that of maximum speed required at the driven mechanism.

**Input torque :** Check maximum acceleration torque of the servo motor, multiply this torque rating with the required reduction ratio to get the maximum acceleration torque available at the output of the gearhead, this should be less than the maximum acceleration torque rating,  $T_a$ , of the selected gearhead.

$T_a$  can be applied for maximum 900 times per hour. Select higher frame size of the gearhead if  $T_a$  does not meet the demand accelerating torque requirement. Larger frame size may also be required if application demands duty cycles of more than 900 per hour.

**Peak torque :** The peak output torque rating,  $T_p$ , indicates the capacity of the gearhead to withstand the short time load transients that result from instantaneous stoppage of the servomotor by applying its emergency stop brake, jamming of the driven mechanism, etc.  $T_p$  can be applied for maximum of 1000 times in service life of the gearhead.

**Thermal Rating :** Thermal rating is the power that can be transmitted by the gearhead without exceeding the permissible temperature rise. Check the thermal rating (Watts) of the selected gearhead to ensure that it is within the average power (Watts) that the application demands. Performance data table gives the thermal ratings of these gearheads at ambient of 40 deg C. as well as at 20 deg. C. Select the higher frame size if demand average power exceeds the specified thermal rating of the gearhead.



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