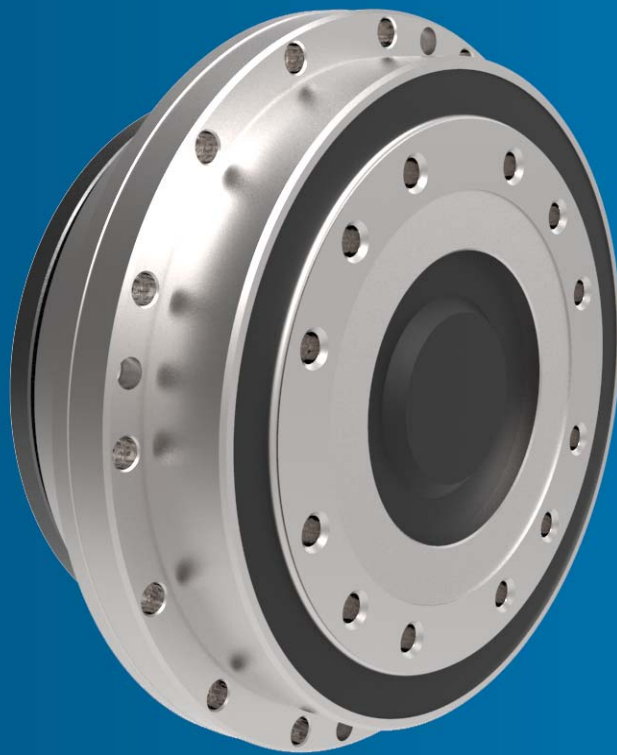


# ***GAM GPL Series***

## **ROBOTIC PLANETARY GEARBOXES**



**GAM CAN.**



## Robotic Planetary Gearboxes

GAM's **GPL Series Robotic Planetary Gearboxes** provide the lowest backlash and high tilting rigidity for horizontal and vertical **robotic** and **motion control** applications.

- With a backlash of  $\leq 0.1$  arcmin, the GPL Series can be considered a **zero backlash** gearbox
- Best-in-the-market **torsional rigidity** for  $\leq 0.6$  arcmin lost motion
- Patented design guarantees the **backlash will not increase** over the life time of the gearbox
- Industry-accepted proven performance
- Seven sizes with nominal output torque of 445 to 3505 Nm and ratios of 50:1 to 200:1
- Flanged solid shaft output or flanged hollow shaft output (up to 75 mm through hole)
- GAM Motor Adapter Plate ready to mount your motor

With seven sizes, two output options, and ratios up to 200:1, there is a GPL for your application.

### Features



### Benefits

Zero Backlash $\leq 0.1$ arcmin	Highest precision for your application
Lowest lost motion $\leq 0.6$ arcmin High torsional rigidity	Superior accuracy even with low torque
Patented self-adjusting backlash system	Constant precision throughout the entire lifetime
High torque density 58-73 Nm/kg	Smaller gearbox, lighter overall system
Fully-loaded life 20,000 operating hours	Longer lifetime, reduced maintenance costs
Efficiency $> 90\%$	Lower power consumption, smaller motor
Quiet $< 70$ dB	Reduced workplace noise exposure
High output, acceleration and emergency stop torque	More security for your application
Superior tilting and torsional stiffness	Allows precise positioning
Low vibration	High repeatability
Lowest breakaway torque	Better control of the overall system
Standard mineral oil	Reduced lubrication cost
Low operating temperature	Longer component and lubricant life
Low moment of inertia	Excellent dynamic performance
Compact design, low weight	Lighter overall design
GAM flange input with motor adapter and clamp	Ready to mount your motor

# GAM ROBOTIC PLANETARY GEARBOXES

## Applications

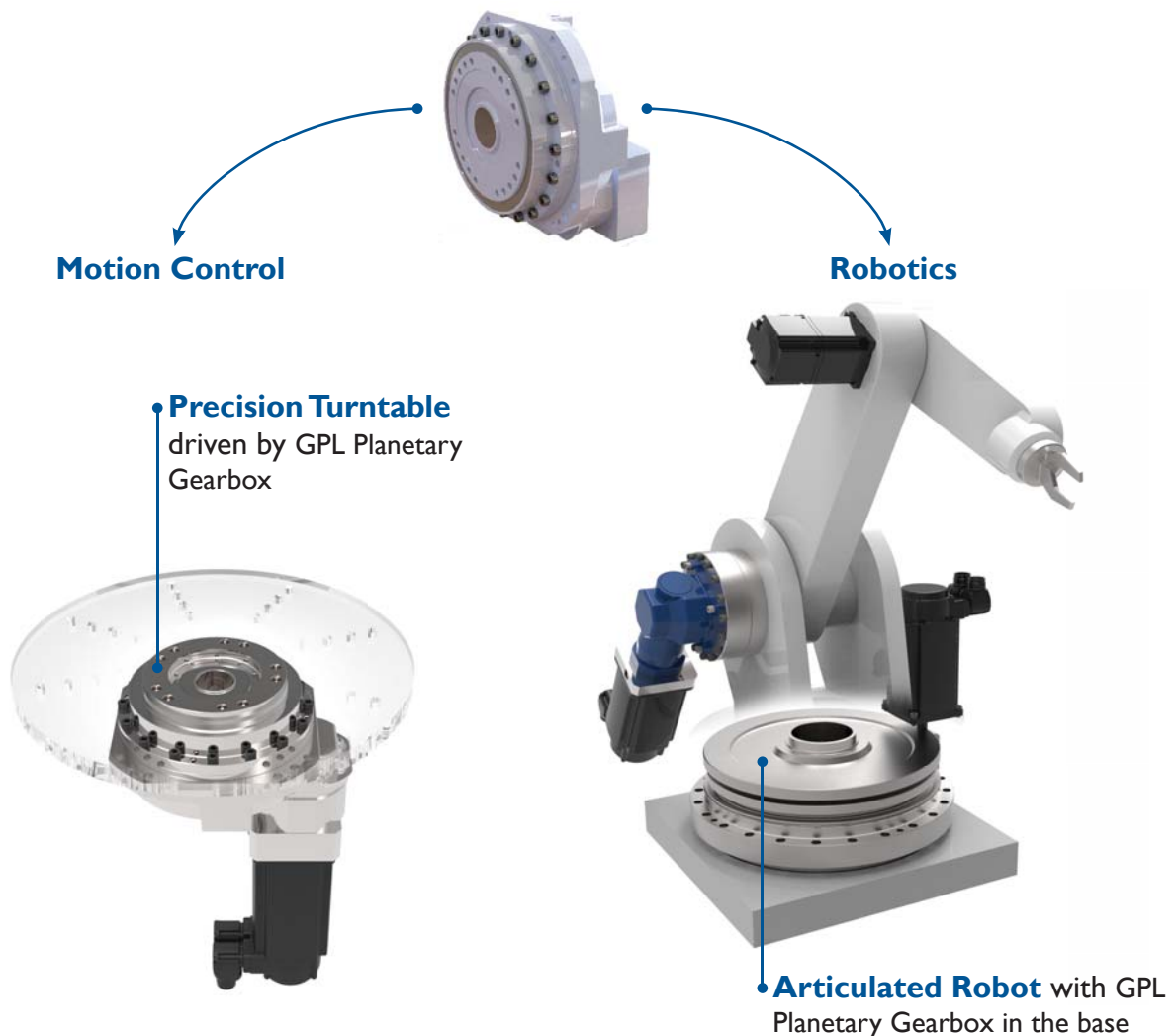
The GPL Series can be used in a variety of applications where zero-backlash, high tilting and torsional rigidity, and long life are required. With the large output mounting flange, through-hole option, and servo-ready mount, the GPL is ideal for many **robotic** and **motion control** applications:

- Robots
- Handling systems
- Tool changers
- Positioning
- Rack & pinion
- Pick & place
- Turntables
- and many more

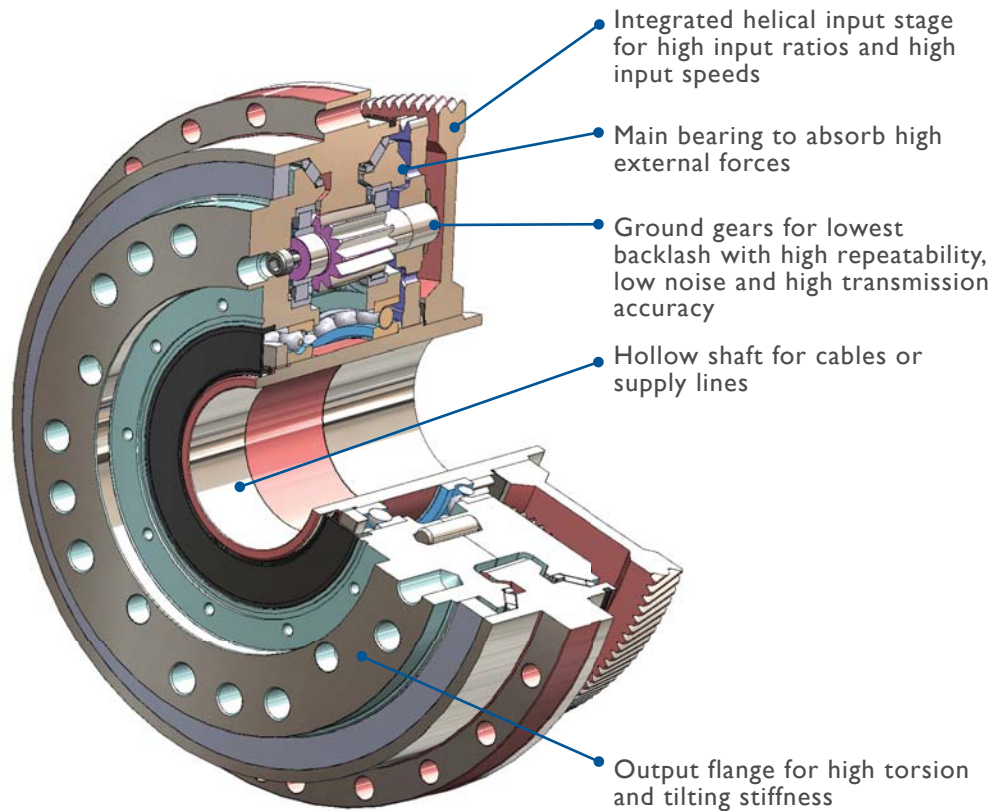
## Industries

The GPL Series is ideal for many industries including:

- Robotics
- Automation
- Packaging Machines
- Machine tool builders
- Turntables
- Printing industry
- Welding Systems
- Medical
- Navigation
- and many more



## Design Features

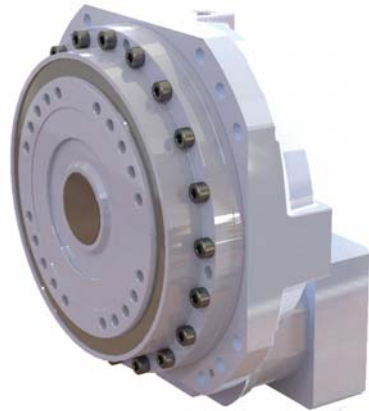


## Superior Performance

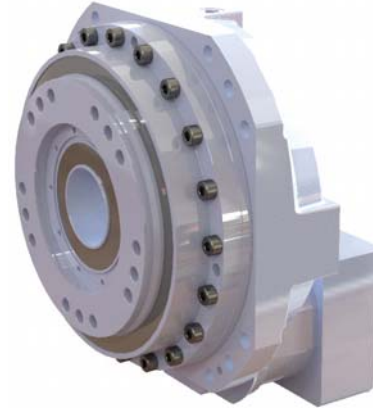
The GPL Series provides superior performance compared to cycloidal gearboxes

Feature	GAM Planetary	Cycloidal
<b>Backlash</b>	<0.1 arcmin, remains constant throughout the whole lifetime of the gearbox	Backlash can increase after approximately one year, requiring adjustment
<b>Torque</b>	Torque of the gearbox rated with output speed $n_2=15$ rpm	Some published torques rated for output speed of $n_2=5$ rpm
<b>Service Life</b>	20,000 operating hours	6,000 hours
<b>Efficiency</b>	>90%	>85%
<b>Power Density</b>	Highest power density (Nm/kg) in comparison to other manufacturers' gearboxes	
<b>Duty Cycle</b>	S1 (continuous) duty cycle is possible as the teeth are in contact immediately when operation starts; high input speeds up to 6600 rpm are possible.	Lower input speeds per published catalog values

## GPL Series Models



**Solid Shaft with Flange (F)**



**Hollow Shaft with Flange (H)**



**GAM Motor Adapter Plate**  
for quick and easy motor mounting

## Technical Specifications

GPL Gearbox		056	080	112	160	224	300	400
Nominal Ratios	(F)*	50, 63, 80, 100, 125, 160, 200						
	(H)*	35.5, 45, 56, 71, 90, 125, 131.5						
Outer Diameter	mm	180	200	232	248	263	301	329
Nominal Output Torque	Nm	445	770	1165	1450	1820	2690	3505
Length (F) **	mm	91	102.25	118.25	122.5	132	148.75	161
Length (H) **		103.3	116.5	128.25	132.5	141	160.25	172
Max Radial Force (Dynamic)	N	11,000	11,500	18,000	19,000	20,000	26,500	29,000
Power Density	Nm/kg	57.8	68.8	73.3	72.9	65.7	71.9	69.7
Torsional Stiffness (F)*	Nm/arcmin	165	260	430	570	680	1130	1350
Torsional Stiffness (H)*		185	305	480	690	820	1240	1460
Tilting Stiffness (F)*	Nm/arcmin	1170	1560	2230	2300	2620	5490	6260
Tilting Stiffness (H)*		2090	2730	3315	3670	4100	8810	10,250
Through Hole Diameter (H)*	mm	33	42	50	55	60	68.5	75
Backlash		≤ 0.1 arcmin						
Lost Motion		≤ 0.6 arcmin						
Efficiency		≥ 90%						

\* (F) = Solid Flange Output; (H) = Hollow Shaft Output \*\* Length of main body, does not include input pinion housing and motor adapter

# GAM - Corporate Overview



## About GAM

Founded in 1990 by Gary A. Michalek, GAM is a U.S. owned and operated manufacturer of precision motion control components used in automated machinery. We offer a broad product range of gear reducers, servo couplings, and other specialized mechanical drive solutions. Our customers are in a wide variety of industries including aerospace, automotive, medical, material handling, energy, packaging, machine tool, robotics and semiconductor.

## What makes us different?

1. A wide range of standard products
2. Flexibility - Customized solutions at a value to our customers
3. Excellent customer service (*customers often tell us "we are good to work with"*)

## Our mission is to be flexible and give great service!

We are the market leader, known for our flexibility to offer our customers the best solution to meet their unique application requirements. We are passionate about helping our customers and employees be successful! Our customer service is driven through the entire organization, and our lean manufacturing enables us to deliver standard, modified, or customized products quickly, and at a price that is a value, no matter what quantity.

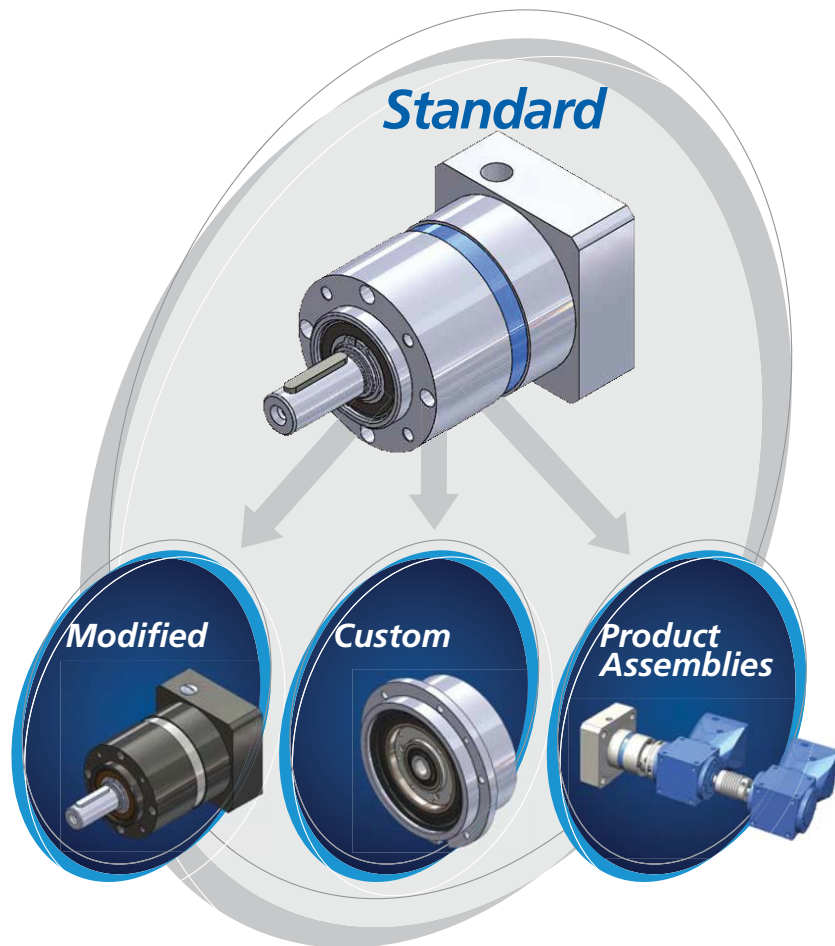
## Capabilities

- Application Engineering - *Upfront collaboration to understand customer requirements*
- Design Engineering - *Highly skilled team of engineers to develop standard, modified, and customized solutions*
- U.S. Manufacturing - *Flexible systems, state-of-the-art CNC equipment and assembly cells to bring the ideas to life*
- Quality Control - *Quality management system and dedicated staff to ensure products are produced to specification*

## Our Core Values

- Teamwork
- Action-Oriented
- Long-term Relationships
- Professionalism
- Fun

# The GAM Advantage



## Find the exact solution you are looking for at GAM!

GAM's product range of gear reducers, couplings, and other specialized mechanical drive solutions is one of the largest in the industry. Even with such a wide offering, we realize that you may not find a standard product that meets your exact requirements.

One of our greatest strengths is our ability to modify standard designs, provide completely customized solutions, and integrated product assemblies to meet your specific application requirements. And, because of our flexible manufacturing, we can cost-effectively produce small batches of customized product in short lead-times.

*So if you can't find what you are looking for, just ask!*

*A few examples of our customized solutions:*



Low backlash planetary gearbox with special output shaft length



Reinforced compact planetary gearbox with spline output shaft



Spiral bevel gearbox with special mounting features for unique application



Flange output gearbox with special input shaft designed for explosion-proof application



GAM is your complete source for Gear Reducers, Servo Couplings, and other precision mechanical drive solutions used in automation technology.

With one of the largest product offerings in the motion control industry as well as the engineering expertise and manufacturing capabilities to develop customized solutions, GAM can help with your application.

Being flexible to meet the needs of customer requests and great service are what set us apart from the rest.

GAM Can.

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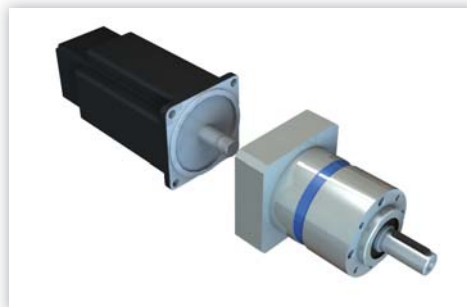


Email a **GAM**  
Applications Engineer



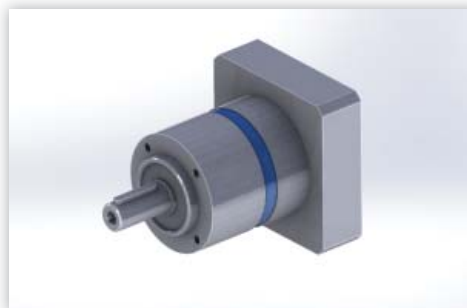
#### GAM Website

- Clean layout for easy navigation
- Continually updated with pertinent news and information
- Online Catalog with over 16,000 products
- Search products on performance specifications or by part number



#### Sizing Tool

- Quickly size the right gear reducer, coupling, or linear mount product compatible with your motor
- Over 9,000 popular servomotors available
- Easily narrow down the products that match
- Compare matching products side-by-side



#### Download CAD models

- All products configured to your specifications
- Quickly downloadable in popular 2D / 3D CAD formats
- Models available in .PDF and 3D PDF
- Motor selection tool for simple adapter plate generation