



Servo Gear Units

***Geared to a higher
standard™***

**In-Position
Technologies**

www.iptech1.com | (877) 478-3241 | help@iptech1.com



STÖBER

Servo Gear Units



Welcome to STOBBER!

Thank you for your interest in the servo gear reducers offered by STOBBER Drives, Inc.!

In 1934, the Stöber brothers founded a small shop in Pforzheim, Germany that made machines and repaired engines. Today, STOBBER is an international organization with offices in ten countries.

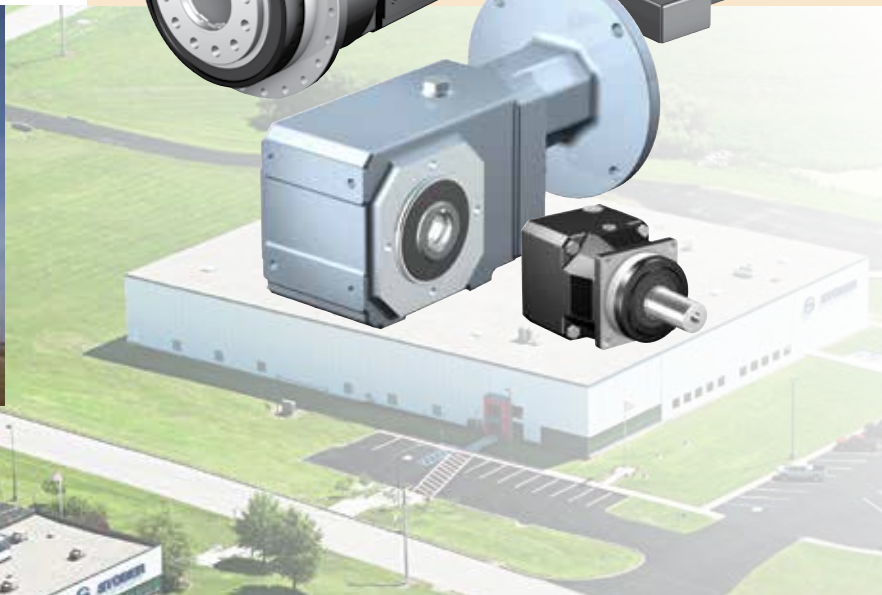
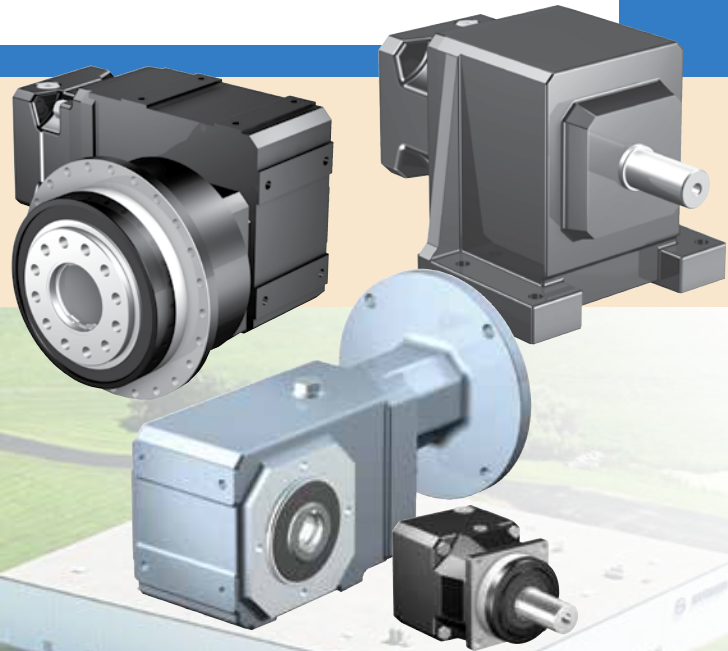
This 80 year heritage has given us expertise in servo gearing for which STOBBER is recognized worldwide as the “gold standard.” STOBBER products are of the highest quality and use only the best components.

This catalog covers our comprehensive servo gearbox products — Servo Precision Planetary and Modular Gearheads. STOBBER is recognized across the United States for its solution design, product durability, and service support. We look forward to the opportunity to work with you, and to help with your servo gearing needs.

Peter Feil, General Manager, STOBBER Drives, Inc.



STOBBER Drives Inc. was founded in 1991. Our Maysville, Kentucky campus includes 85,000 square feet of sales and service offices, assembly, manufacturing, and warehousing space for German-engineered STOBBER products for 1 day shipment nationwide.



Contents

About STÖBER Drives	4-5	
Servo Gear Units Features	6-7	
Servo Gear Units Overview At-a-Glance	8-9	
Servo Gear Units Sizing/Selection	10-11	
Inline & Offset Gearhead Series	P/PA	14
	PH (A, Q, QA)	46
	PE	92
	C	102
	F	140
	K/KL	162
Right Angle Gearhead Series	PKX/PK	214
	PHKX/PHK/PHQK	248
	KS	298
	KSS	312
Technical Reference	326	
Terms & Conditions of Sale	330	
Other STÖBER Drive Products	331	



All manufactured components are inspected before being released to assembly. Our quality inspection team ensures every part meets tolerances and is in spec.

Unsurpassed:

STÖBER products are designed and built to perform for the toughest applications. Reliability, adaptability and maintainability are our focus, and durability is truly our trademark.

Solution Designs that build quality around every requirement.

Product Durability that enhances the reliability and life of every application.

Service Support that is empowered to meet and exceed client expectations.



STÖBER Serviced Industries:

- Beverage
- Food Processing
- Packaging
- Machine Tool
- Robotics
- Material Handling
- Semiconductor
- Printing
- Converting and many others...

Servo Gear Units

The Best you Can Buy...

At STÖBER, offering the best is not a buzz word — it is our passion and way of life. We offer the best product, provided by the best people and processes, and backed by the best service.

Why is STÖBER considered the industry Gold Standard? Our products are backed with superior service, outstanding quality, and the STÖBER guarantee.

- STÖBER gearheads survive in the toughest environments, providing long life under extreme conditions. Their high reliability and durability saves non-productive downtime and cost
- Our product reliability is backed by one of the best warranties in the industry
- We build and ship in 1 day saving you inventory hassle and cost
- Adapts to any servo motor

The Servo Gear Difference

A STÖBER Servo Gearhead helps optimize your total operational performance with:

- High torsional stiffness, superior accuracy
- Smoother running, better efficiency
- Leakage free, maintenance free
- Runs cool – a difference you can feel
- Runs measurably quieter – 16 times more quiet*
- Lower backlash
- The versatility and interchangeability of our components allow most products to be assembled and shipped in 1 day

* Noise Level

If a planetary is loud — something is WRONG!

STÖBER Servo planetary =
60 dB(A)

Convention spur gear planetary =
70-72 dB(A)

Bottom line: 1 conventional gearhead produces the same noise level as 16 STÖBER planetary gearheads with HeliCamber™ gearing

Striving Harder to Deliver the Best Gear Solutions

STÖBER Drives has been assembling products at our Maysville, Kentucky facility for over twenty years. Our expertise in the production and assembly of low-backlash gear units produces products that comply with the highest quality standards.

But, we don't remain satisfied with the status quo. We are continuously improving our modern machining production center including numerous recent acquisitions to improve our manufacture time and to ensure maximum quality levels.

All reducer components (gears, covers, material, etc.) are backed by a five year warranty. Normal wear items (oil seals, bearings, etc.) are covered for two years.

Vision: To be recognized as the gold standard

Mission: To provide the most reliable drive solutions for demanding applications in the shortest lead-time

Values: Seeking the best; operating with integrity; serving others, growth through learning





Assembly stages of “F” Series gearheads: Paint curing oven allows for one day assembly and higher paint durability (left); units awaiting final inspection prior to shipment (right).

Service Support for a Lifetime

We stand behind every drive we sell, which is why our service support is also the gold standard in the industry:

STOBER takes pride in offering knowledgeable, factory-trained USA-based service support for our customers. When you call, you won't get a call center on the other side of the globe. Your call is answered in 3 rings or less, letting you know you've found a support system that values your time.

Our easy order method insures you maintain a single contact throughout the process. And, your service representatives are directly responsible for your account. After the sale, our products are easy to install, but if you do have a question or a problem, we provide application and installation support anywhere in the US. With over 80 years gearing & 30 years motor and electronics experience, we have the expertise to solve your most difficult problems.

Application Support Programs

- For support during normal business hours: call 800-711-3588 or email sales@stober.com
- 24/7 emergency customer service hotline: 606.563.6035
- Consultative product support team available via phone or live chat on our website
- Application Sizing Software
- Online web tools: CAD and configurator
- On-site training available
- Emergency shipments available 24/7



Key STOBER Numbers

- 1 day shipping
- 1 hour quoting
- 3 rings or less when you call in — we answer the phone, not an automated switchboard!
- 100% inspected and tested during assembly for seal pressure test and ratio verification. STOBER also observes the reducer for any abnormal noise or vibrations during testing
- 5 year warranty
- 24/7 customer service



STOBER Staff Team Members

Facing page: Earl Bennington, Warehouse Team Leader, 1992, and Anita Truesdell, Picker, 2007;
From top, left to right: Stephanie Berry, LMS Administrator, 2006; Brian Sharp, Product Management Team Leader, 2003; Rick McCall, Machinist, 2007; Lee Thomas, Industrial Engineer, 2003

The Servo Gear Unit Difference

The following outlines some of our quality standards and unique STÖBER features that set Servo gearheads apart from all others...

Food and Corrosion Resistant Duty

P PKX PK C F K/KL KSS

Lifetime lubrication; double output seals (where possible); maintenance free design; stainless output bushing, shaft, or bore — finish is USDA approved for food processing and handling; heat cured.

KSS for extreme high pressure food washdown!

- IP69K certified for extreme high pressure food washdown (sprayed at close distance at 100 bars or 1,450 PSI)
- Certified against dust and water ingress
- 304 stainless steel cast housing

Explosion Proof

P PA PH PHA PHQ PHQA
PKX PHKX C F K

ATEX is often used in process control and converting where unstable gases and dust can be found

ATEX is a directive consisting of two European directives describing equipment or work environment allowed in an environment with an explosive atmosphere. ATEX derives its name from the ATmospheres EXplosible.

Please consult our product support team for assistance selecting an ATEX gearbox.

Large Input Planetary

P PA PE PH PHA PHQ PHQA KS

Equipping a Servo gearhead with the large input option allows a larger shaft diameter motor to be used, keeping gearhead size and cost down! This input is ideal for inertia matching.

ServoCool®

P PA PH PHA



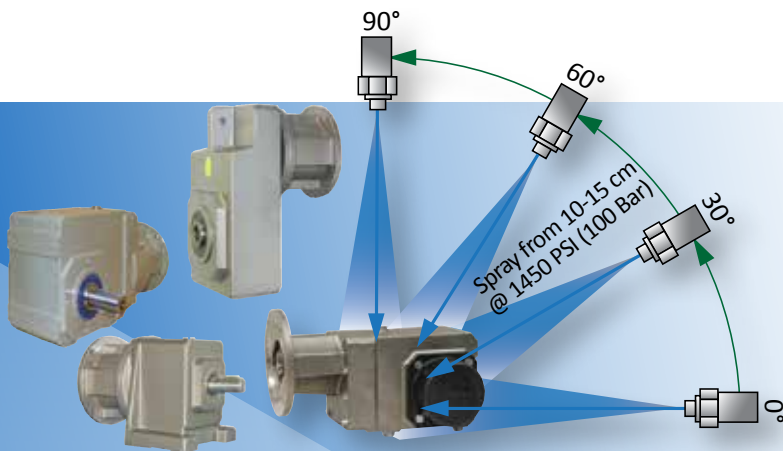
Servo gearheads with the air cooled ServoCool® option reduces the operating temperature 22°C (increases the ambient temperature limit 22°C), increases the output speed 54% and improves the servo motor rating 25%.

Servo motors are connected to Servo gearheads by using a motor adapter.

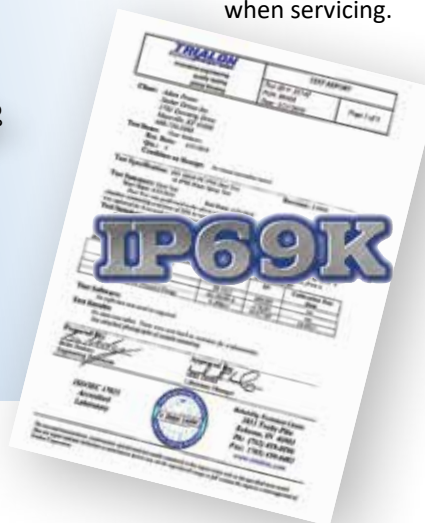
Spiral Groove Hollow Bore

F K KL KS KSS

The inside diameter on our hollow bore units feature a spiral (rifle) bore design providing an anti-seize lubricating groove. This enables the Servo gearhead to slide off freely when servicing without damage to the output shaft. With conventional smooth-surface hollow bore designs, any anti-seize lubricant applied during installation of the output shaft has no where to go except out the other end. Invariably, these designs will seize, making it necessary to cut off the output shaft when servicing.



Above: KSS Servo Gearheads are IP69K certified to withstand frequent pressure cleaning operations typical in the food industry and elsewhere. Other STÖBER products, including C, F and K Series, are optionally available with IP69K compliant protection.

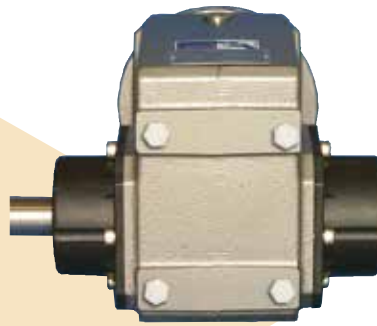


Wobble Free Bushing

F K KL KSS

The STÖBER “Wobble Free” bushing is a unique (U.S. Patent Number 5,496,127), bushing system which can be supplied on a single side or double sides. Each case size can be provided with a variety of bushing bores. The unit is selected based on torque rating, output speed or ratio, and the shaft size of the driven equipment.

- A distinct support side and a clamp side, the dual tapered cones will overcome a wide range of tolerances normally found with standard shaft materials. No shaft key necessary.
- Many unit sizes can be supplied with output covers on one or both sides which protect the seals and also cover the rotating bushing
- The reducer output bore can be changed any time by changing the bushing kit
- The quill, all bushing parts, and hardware can be supplied stainless steel to provide corrosion resistance for washdown applications



Double Sided Bushing:

This unique design allows the unit to be mounted on the shaft from either side of the reducer by reversing the clamp side and support side bushings. The clamp side is determined by the customer but is usually the easily accessible outside bushing.

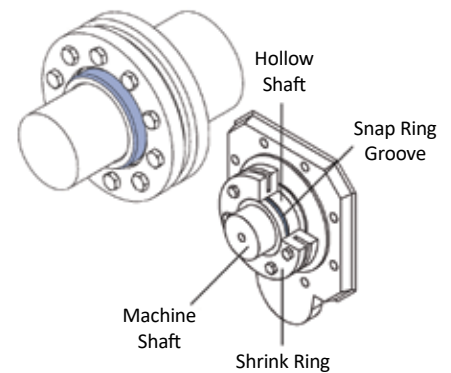
The double sided bushing is not installed into the unit at assembly, but with easy-to-follow installation instructions, the unit and bushing can be mounted on the machinery quickly – without any special tools.

Single Sided Bushing :

The single sided bushing is assembled at the time of the order. The bushing side extension must be specified by the customer before assembly. The bushing is installed into the unit for shipping and is not interchangeable once the unit is assembled.

Shrink Ring Connection

F K KL KS



F, K, KL and KS Series gearheads with a hollow bore can be connected to a finished machine drive shaft by frictional engagement through compression of a shrink ring on the hollow shaft.

This shaft-hub connection is totally free of backlash. Because of its self-centering property, it can transmit high torques and axial thrusts with great accuracy.

Gear units supplied with a shrink ring, are shipped with the ring installed on the hollow shaft end, ready for assembly.

See page 331 for More Servo Gearhead Compatible Products...

EZ Series Servo Motors available to fit all Servo gearheads

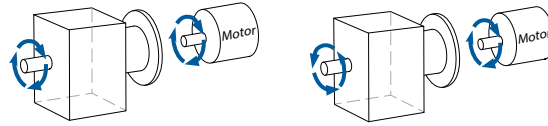
Rack and Pinion Servo gearhead systems are a ready to install engineered solution for precision automation applications requiring forces up to 122 kN (27,400 lbs.) with linear backlash as low as 7 µm

ServoStop automatic, electrically-actuated integrated holding brake used in place of a servo motor brake for dynamic safety braking, or in conjunction with the servo motor brake for redundancy in safety applications



Servo Gear Units

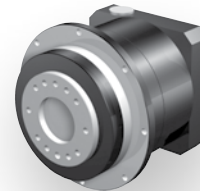
Inline & Offset Inline Gearheads



P/PA — Shaft Output *

STOBBER P Series is the cornerstone of most of our inline family of precision planetary gearheads. They are the most accurate and efficient planetary gearheads available. HeliCamber® gear technology provides minimum wear, low backlash and low noise. The PA Advanced Series takes backlash to the absolute minimum, and performance to the max.

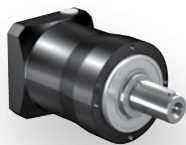
- 3:1 to 100:1
- Up to 2,000 Nm torque (nom)
- Up to 8,000 RPM input speed
- Backlash: P: <3 arc min; PA: <1 arc min



PH/PHA/PHQ/PHQA — Flange Output*

STOBBER PH family gearheads offer a rotating flange output version of the P Series. The PHA Advanced Series takes backlash to the absolute minimum, and the PHQ and PHQA feature “Quattro” power planetary gearing for extreme torque and ratio capabilities.

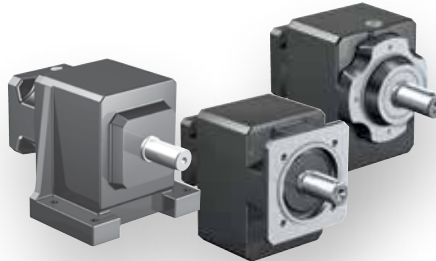
- 4:1 to 600:1
- Up to 13,000 Nm torque (nom)
- Up to 8,000 RPM input speed
- Backlash: PH/PHQ: <3 arc min; PHA/PHQA: <1 arc min



PE — Shaft Output*

STOBBER PE Series Servo Precision Planetary Gearheads are available for applications where very low backlash is not a criteria. They are an economical helical tooth planetary, comparable in quality to other STOBBER units.

- 3:1 to 100:1
- Up to 160 Nm torque (nom)
- Up to 8,000 RPM input speed
- Backlash: < 8 arc min



C — Shaft Output*

STOBBER C Series gear drives offer performance, durability, and economy for a wide range of applications. High efficiency helical gearing keeps motor size to a minimum while running almost silently.

- 2:1 to 276:1
- Up to 7,000 Nm torque (nom)
- Up to 6,500 RPM input speed
- Backlash: < 14 arc min

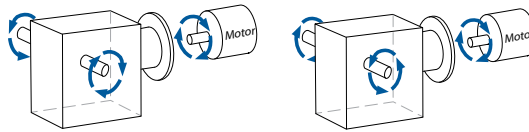
F — Versatile Outputs*

STOBBER F Series gear drives are a popular choice for applications that require high performance, efficiency, durability, and flexibility. F Series are available with a wide selection of configurations to match almost any mounting requirement.

- 4:1 to 551:1
- Up to 1,100 Nm torque (nom)
- Up to 7,000 RPM input speed
- Backlash: < 10 arc min

* See page 326 for comparison of all output options and sizes available

Right Angle Gearheads



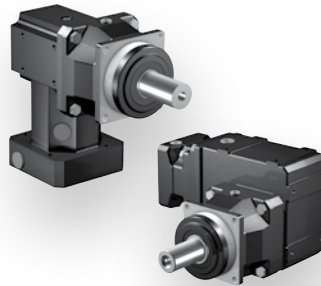
Many right angle gearheads offer output on either or both sides



K – Versatile Outputs*

STOBER K Series helical/bevel gear drives are the most popular and versatile Servo right angle gearheads. They are the optimal drive for truly demanding continuous-duty applications, offering higher efficiencies than conventional worm gear drives or planetary gearheads.

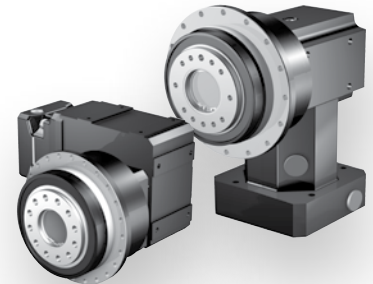
- 4:1 to 381:1
- Up to 12,000 Nm torque (nom)
- Up to 7,000 RPM input speed
- Backlash <10 arc min



PKX/PK – Shaft Output*

STOBER PKX and PK Series precision planetary gearheads combine the P Series gearhead with the low ratio “KX” right angle platform or the reduced backlash K Series platform.

- Ratios: 3:1 to 300:1;
- Up to 2,000 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: PKX: ≤4 arc min;
PK: ≤3.5 arc min



PHKX/PHK/PHQK – Flange Output*

STOBER PH right angle gearhead configurations offer a rotating flange output combining the P Series gearhead with the low ratio “KX” or reduced backlash K Series. The PHQK features the “Quattro” power planetary gearing for extreme torque and ratio capabilities.

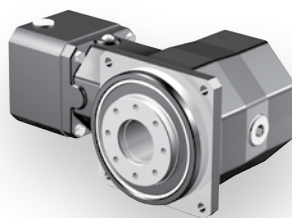
- 4:1 to 591:1
- Torque: 13,000 Nm (nom)
- Up to 7,000 RPM input speed
- Backlash <3.5 arc min



KL – Versatile Outputs*

The STOBER KL Series offers the same output and housing versatility as the K series, but is much more compact and ideal for smaller gearhead size applications.

- 4:1 to 32:1
- Up to 50 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: ≤20 arc min



KS – Versatile Outputs*

STOBER KS Series precision planetary gearheads use time-tested helical gearing and finish ground spiral bevel gears to provide a low backlash unit, that is smooth running, with high efficiency, high power density, and high input speed capacity..

- 6:1 to 200:1
- Up to 250 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: < 4 arc min



KSS – Versatile Outputs*

STOBER is proud to offer our quality-proven, high-efficiency KSS Series Helical/Bevel speed reducer in a stainless steel housing necessary for the toughest washdown applications.

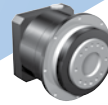
- 4:1 to 70:1
- Up to 346 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: < 10 arc min

Servo Gear Units

Versatility

STOBER Drives offers the world's largest variety of gearheads to fit virtually all servo needs.

INLINE & OFFSET INLINE GEARHEADS



Performance, Configurations and Options

		P	PA	PH	PHA	PHQ	PHQA	PE	C	F
		page 14		page 46				page 92	page 102	page 140
Input	Large Input	•	•	•	•	•	•	•		
	ServoCool	•	•	•	•					
Output <small>(see page 326 for details)</small>	Solid Shaft	•	•					•	•	•
	Hollow Bore									•
	Rotating Flange			•	•	•	•		•	•
	Shrink Ring									•
	Single Bushing									•
	Double Bushing									•
	Flange								•	•
Housing	Foot Mount								•	•
	Tapped Holes								•	•
	IP65	•	•	•	•	•	•	IP64	•	•
Protection	IP69K Washdown								Opt	Opt
	ATEX Certified	Opt	Opt	Opt	Opt	Opt	Opt		Opt	Opt
	304SS Housing									
Paint/Coatings	Standard Black	•	•	•	•	•	•	•	•	•
	Food Duty	•							•	•
	Corrosion Resistant Duty								•	•
Added Functionality	ServoStop*	•	•	•	•				•	•
	Rack and Pinion*	•	•	•				•		
Performance <small>+ Good +++ Better +++++ Best</small>	Continuous RPM	+++	+++	++	++	++	++	+++	+++	++
	Stiffness	+++	+++	++	++++	+++++	+++++	+	+	++++
	Torque Density	+++	+++	++	++++	+++++	+++++	+	+	++++
Precision <small>ArcMin Backlash</small>	1	•		Opt		Opt				
	1-3			•		•			•	
	3-5				•					
	5-10						Opt			Opt
	10-15		•				•			•
	15-20							•		
Nominal Output Torque Ranges <small>Nm</small>	0-50	•	•	•	•			•	•	•
	50-200	•	•	•	•			•	•	•
	200-1,000	•	•			•	•	•	•	•
	1,000-5,000	•	•			•	•	•	•	•
	5,000-10,000					•	•	•	•	•
	10,000-23,000					•	•			

* See page 331 for more information

RIGHT ANGLE GEARHEADS

SS304



	K	KL	PKX	PK	PHKX	PHK	PHQK	KS	KSS
	page 162		page 214		page 248			page 298	page 312
								•	
	•	•	•	•				•	•
	•	•						•	•
	•	•			•	•	•	•	
	•	•						•	•
	•	•							•
	•	•							•
	•	•	•	•	•	•	•	•	•
	Opt	Opt							•
	Opt		Opt		Opt	Opt	Opt	Opt	•
	•	•	•	•	•	•	•	•	
	•	•	•	•					
	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•	
	++++	++	+	++	+	++	++	+++	+++
	+	+	+++	++	++++	+++	+++++	++	+
	+	+	+++	++	+++	++	++++	++	+
				•					
	Opt		•		•	•	•	•	
	•								•
		•							
	•	•	•		•		•	•	•
	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•

Servo Gear Units Application-Tailored Solutions

Industry	Ideal Gearhead Applications	Recommended STÖBER Gearhead
Aerospace	<ul style="list-style-type: none"> Automated Guided Vehicles (AGV) Drilling and Riveting Machine Tool Testing and Inspection 	<ul style="list-style-type: none"> Carbon Fiber Placement Fuselage Space Tracking Systems Wing assembly
Automation	<ul style="list-style-type: none"> Assembly turn tables Linear presses Robotics auxiliary axis Palletizing 	<ul style="list-style-type: none"> Custom assembly machines Radar Pipe and wire bending
Automotive Manufacturing	<ul style="list-style-type: none"> Transfer lines Robotic auxiliary Machining Tire manufacturing Carbon fiber production 	<ul style="list-style-type: none"> Metal cutting and bending Pick and place Index tables Electronics assembly
Converting	<ul style="list-style-type: none"> Cutting Tension Control Web Lines 	<ul style="list-style-type: none"> Winding Paper Converting
Machine Tool	<ul style="list-style-type: none"> Horizontal and vertical mills Large gantry cranes Carbon fiber placement Flame, laser, water jet, and plasma cutting Back gauging 	<ul style="list-style-type: none"> Grinding X-Y tables Indexing tables Chip conveyors Bending and forming Tool changers
Material Handling	<ul style="list-style-type: none"> Pick and place Line diverter Sorting/diverting 	<ul style="list-style-type: none"> Linear transfer Palletizing
Medical	<ul style="list-style-type: none"> Imaging Radiation Centrifuge 	
Packaging	<ul style="list-style-type: none"> Continuous or intermittent filling applications 	
Plastics/Composites	<ul style="list-style-type: none"> Often used to replace hydraulic actuators in injection molding Injection molding Carbon fiber placement 	<ul style="list-style-type: none"> Extrusion lines Blow molding Thermoforming Rubber molding
Printing	<ul style="list-style-type: none"> Labels Flexographic printing 	<ul style="list-style-type: none"> Circuit Boards Sheet
Robotics	<ul style="list-style-type: none"> Delta Pick and place Telescoping arms 	<ul style="list-style-type: none"> Auxiliary axis to rotate and move robot Positioning axis
Semiconductor	<ul style="list-style-type: none"> Wafer polishing Wafer handling 	<ul style="list-style-type: none"> Circuit web printing
Valve Control	<ul style="list-style-type: none"> Ideal for handling rapid dithering positioning Ball, gate, and globe valves 	<ul style="list-style-type: none"> Throttle/governor valves Chokes Process valves ATEX explosion proof available

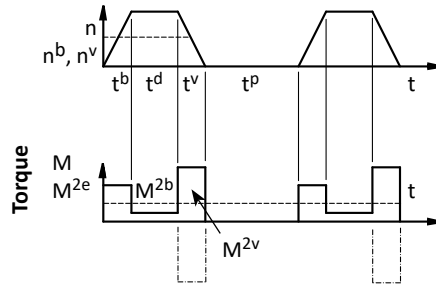
Gearhead Sizing to your Specific Application Requirements

Sizing/Selection

Use the chart on the facing page and below to determine the best series and the right size gearhead to meet your specific application requirements. In each product section of this catalog, the necessary data and a "Load/Life/Speed Calculation" section are provided to help you work through these equations..

By all means, please feel free to call or email (sales@stober.com), if you have any questions or need assistance determining the best solution for your application.

Cycle Run



$$M_{2e} = \sqrt[3]{\frac{n_{2b} \cdot t_b \cdot M_{2b}^3 + \dots + n_{2n} \cdot t_n \cdot M_{2n}^3}{n_{2b} \cdot t_b + \dots + n_{2n} \cdot t_n}}$$

Service Factor

Apply to Nominal Rating ONLY

P, PA, PE PH, PHA PHV, PHVA, PHQ, PHQA, KS	PKX, PK, PHKX, PHK, PHQK, C, F, K, KSS
--	---

Load Factor f_B

Operating Mode

Continuous	1.0	1.0
Cyclic	1.0	1.25
Cyclic-	1.0	1.4
Reversing		

Running Time Factor f_L

≤8 hours	1.0
≤16 hours	1.15
≤24 hours	1.2

Apply to Input RPM

Temperature Factor f_T

	Without Ventilation	Fan Cooled
<20°C	1.00	0.90
<30°C	1.10	1.00
<40°C	1.25	1.15

Continuous Duty: Drive is considered continuous duty if the running time ($t^r = t^b + t^d + t^v$) is 60% of the complete cycle time ($t^b + t^d + t^v + t^p$) or longer than 20 minutes.

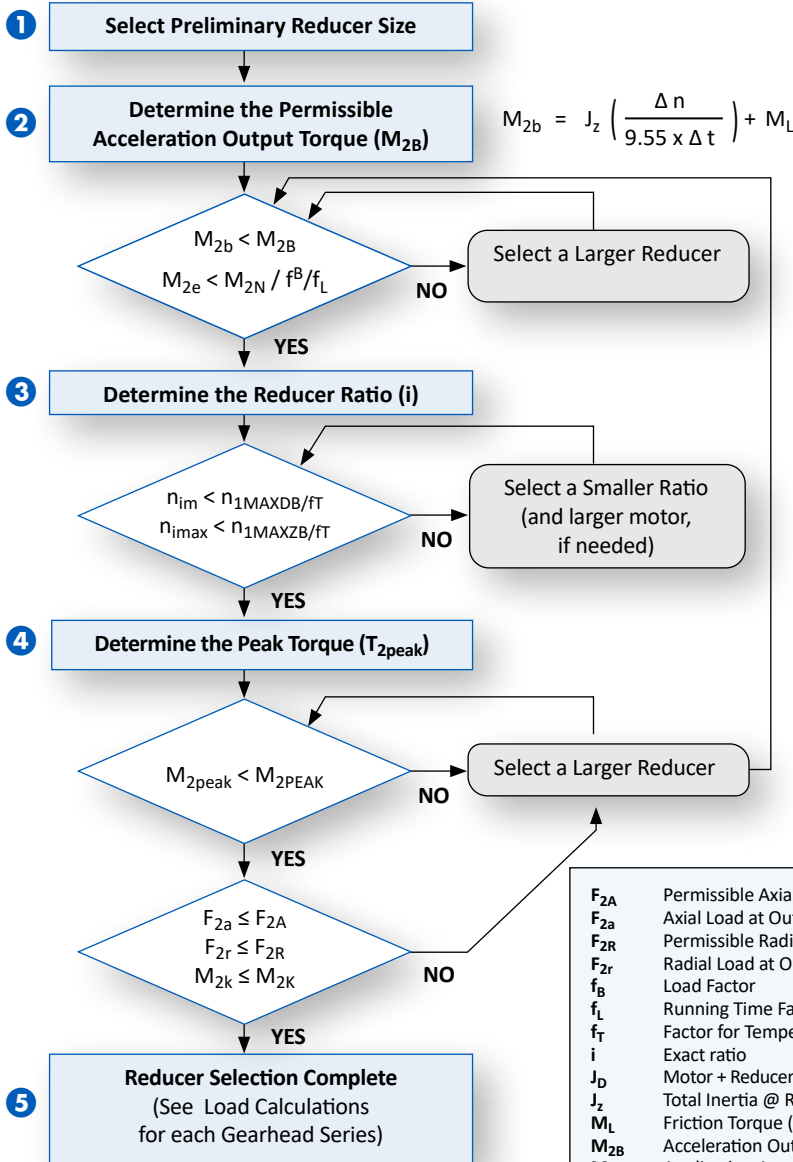
Cyclic Duty: Drive will cycle on and off.

For cyclic operation, the recommended ratio of external (application) inertia to gearhead inertia can be determined by the following equation:

$$\frac{J_z}{i^2} = 4 \cdot J_D$$

The gearhead selected, using the following equation for inertia ratio, will result in the lowest motor torque demand and the optimum drive selection:

$$\frac{J_z}{i^2} = J_D$$



F_{2A}	Permissible Axial Load	M_{2K}	Rated Tilting Torque
F_{2a}	Axial Load at Output Shaft	M_{2k}	Equivalent Tilting Load
F_{2R}	Permissible Radial load	M_{2N}	Nominal Output Torque
F_{2r}	Radial Load at Output Shaft	M_{2peak}	Peak Output Torque
f_B	Load Factor	n_{1db}	Maximum Continuous Input
f_L	Running Time Factor	n_{1zb}	Maximum Cyclic Input
f_T	Factor for Temperature	n_{im}	Maximum Continuous Speed
i	Exact ratio	n_{imax}	Maximum Cyclic Speed
J_D	Motor + Reducer Inertia @ Motor RPM	T_{2PEAK}	Peak Torque
J_z	Total Inertia @ Reducer RPM	t_r	Running Time
M_L	Friction Torque (Losses)	t_b	Acceleration Time
M_{2B}	Acceleration Output Torque	t_d	Duration Time
M_{2b}	Application Acceleration Torque	t_v	Deceleration Time
M_{2e}	Equivalent Torque (Avg RMS Torque)		

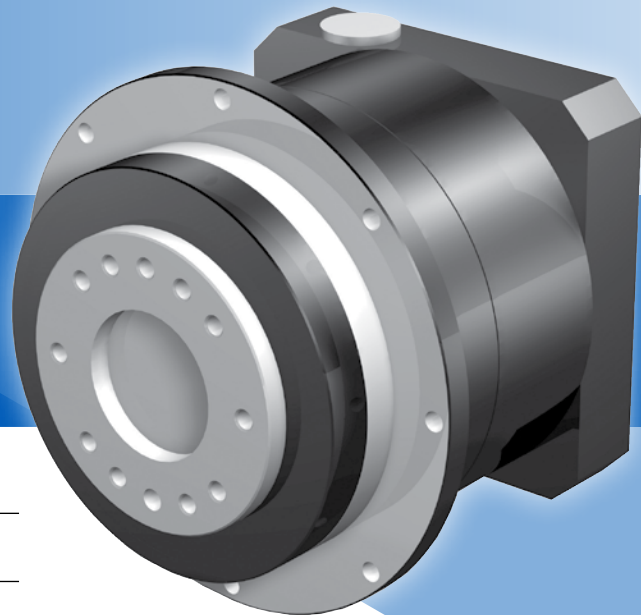
PH Series (A, Q, QA): INLINE — Flange Output

Features

- 4:1 to 600:1 ratios (higher ratios available. Contact STÖBER.)
- Quiet running (As low as 60 dB(A))
- High load capacity and tilting rigidity through symmetrical bearing arrangement
- FKM seals for extended gearbox life
- Large motor input option to accept bigger diameter motor shafts so you don't use an oversized gearbox
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Low no load running torque, giving you more torque for your application
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

STÖBER PH Series Servo Precision Planetary Gearheads are designed for applications that demand torsional stiffness and tilting rigidity. The advanced lines can handle high accuracy machines. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.

**All PH & PHQ Series
and select PHA Series
SHIP in 1 DAY!**
NO EXPEDITE FEE FOR 24
HOUR SERVICE



General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <90°C Max]
Backlash	≤1 arcmins (see performance overview page 48)
Coating	Black (RAL 790-4)
Degree of Protection	IP65
Direction of Rotation	Input and output rotate the SAME direction
Efficiency	1 stage 96%; 2 stage 93%; 3 stage 90%
Input RPM	Up to 8,000 RPM
Installation	Requires 12.9 fasteners. See page 328 for more information
Lubrication	Lubricated for life – standard Mobil SHC629; option food grade Mobil SHC CIBUS 150
Mounting Position	Unrestricted except PHQ/PHQA three stage units, see page 49
Warranty	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)

Comparative Advantages

	PH	PHA	PHQ	PHQA
Precision	Better	Best	Better	Best
Smoothness (low velocity ripple)	Better	Best	Better	Best
Uniformity of motion through full temperature range	Better	Best	Better	Best
Stiffness	Better	Best	Better	Best
Torque density	Better	Better	Best	Best

Overview



Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the PH Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples:

	①	②	③	④	⑤	⑥	⑦	⑧	
PH	3	2	1	F	0050	MT	C		
PHA	3	2	1	F	0050	MF			
PHQ	9	3	3	F	0720	MT			EL1 *
PHQA	4	2	1	F	0055	MF	L		

Design Option	Part Number Code	Description
① Series	PH PHV PHA PHVA PHQ PHQA	Rotating flange output planetary Rotating flange output planetary — 3 Stage (size 9-10 only) Rotating flange output advanced planetary Rotating flange output advanced planetary — 3 Stage (size 9-10 only) Rotating flange output with Quattro power planetary Rotating flange output with advanced Quattro power planetary
② Size	3 4 5 7 8 9 10 11	8 sizes of gearhead (size 3: PH/PHA only; size 11: PHQ only)
③ Generation	2 3	Version of gearhead (size 3-8 are version 2; size 9-11 are version 3)
④ # of Stages	1 2 3	One stage for ratios of $\leq 10:1$ Two stage for ratios $>10:1$ Three stage (PHV/PHVA: Size 9-10; PHQ/PHQA: Size 7-11)
⑤ Housing	F	Flange output
⑥ Ratio	0040	Ratios range from 4:1 to 600:1 (0040=4:1; 0160=16:1; 1000=100:1, etc.)
⑦ Motor Adapter	MT MF MT	For PH/PHQ only – See motor mounting plate option page 50 For PHA/PHQA only – See motor mounting plate option page 50 PHQA size 10 only
⑧ Options	L C	Large Input ServoCool (PH/PHA only)

*Required mounting position special instruction for three stage units only, see page 49

PH Series (A, Q, QA): INLINE — Flange Output

Options

ServoCool

- Used when a higher input speed is required or when improved performance and longer life is needed
- Reduces operating temperatures; helpful for applications with high ambient temperature
- Ideal for large planetary or units with small ratios

Large Input

Accommodates a larger diameter motor shaft without going to a larger size gearbox

ATEX

ATmosphere EXplosible — Please contact factory for this option and allow additional time for delivery

Coating Option

Available with a multi-layer, industrial 316 stainless steel epoxy coating (contact factory)

Rack and Pinion Systems

PH available with rack and pinion. Contact STÖBER Drives.



Right Angle Configuration

The PHQA is available as a right angle drive. Contact STÖBER Drives for details



PH Series (A, Q, QA): INLINE — Flange Output

PH Performance Overview

PH Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

		Size	3				4				5			
		Series	PH/PHA		PH/PHA		PHQ/PHQA		PH/PHA		PHQ/PHQA			
		# of Stages	1	2	1	2	1	2	1	2	1	2		
Acceleration Torque	Nm		65		130		170		320		430			
M_{2BMAX}			65		130		170		320		430			
Output Torque Nom. ¹	Nm		45		90		120		220		280			
M_{2N}			45		90		120		220		280			
Torsional Stiffness	Nm/arcmin		≤15		≤35		≤39		≤85		≤99			
C_2			≤15		≤35		≤39		≤85		≤99			
Torsional Backlash ²⁾	arcmin	PH/PHQ PHA/PHQA	≤4 ≤2		≤3 ≤1		≤3 ≤1		≤3 ≤1		≤3 ≤1			
Input Speed Max.		Continuous Cyclic	3800 6000	4500 8000	3500 6000	4500 8000	2000 6000	4500 8000	3300 6000	4000 7000	2500 5000*	4000 7000		
With ServoCool Option		Continuous Cyclic	— —	— —	4500 6000	— —	— —	— —	4500 6000	5000 7000	— —	— —		
Efficiency (@nom torque)	%		96	94	96	94	96	93	96	94	96	93		
Weight	kg lbs		1.8 4	1.8 4	3.9 9	4.6 10	3.9 9	4.5 10	6.6 15	8.1 18	6.6 14.5	8.1 18		
Noise ³⁾	dB(A)		≤61		≤62		≤60		≤63		≤61			

Performance by Bearing Design Option ⁴⁾

Axial Load Max.	N	1650	2150	4150
F_{2AMAX}		1650	2150	4150
Tilting Moment Max.	Nm	100	260	440
M_{2KMAX}		100	260	440
Tilting Stiffness	Nm/arcmin	53	160	380
C_{2K}		53	160	380

* PHQ cyclic speed is 5000; PHQA is 5500

¹⁾ Ratings based on input speed (n_1) of 2000 RPM.

For torque at higher input speeds (M_{2NX}) solve the formula:
where n_1 = Actual Input Speed.

$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$$

²⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

³⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

⁴⁾ Rating based on output speed (n_2) of 100 RPM. For values at other speeds see page 52.

Overview



Note: Overview data is general. Actual data is dependent on case size and ratio

		7			8				9				10				11							
PH/PHA		PHQ/PHQA			PH/PHA		PHQ/PHQA		PH/PHA**		PHQ/PHQA		PH**		PHQ		PHQ							
1	2	1	2	3	1	2	2	3	2	3	2	3	2	3	2	3	2	3						
700		950			2000		2600		5000		6000		7500		10,000		22,000							
440		650			1250		1700		3000		3800		5000		6500		13,000							
≤167		≤213			≤553		≤649		≤1201		≤1220		≤1743		≤2063		≤3538							
≤3 ≤1		≤3 ≤1			≤3 ≤1		≤3 ≤1		≤3 ≤1		≤3 ≤1		≤3 ≤1		≤3 ≤1.5		≤3 —							
3000 5000	3700 6500	2200 5000	3700 6500	4000 7000	2500 4000	3300 6000	3300 6000	3700 6500	2800 4500	2500 4500	2800 4500	3300 6000	2800 4500	2500 4500	2500 4000	2800 4500	2300 3800	2800 4500						
4000 5000	4700 6500	—	—	—	3700 4500	4300 6000	—	—	4000 4500	3200 4500	—	—	4000 4500	3000 4500	—	—	—	—						
96	94	96	93	90	96	94	93	90	96	94	93	90	94	92	93	90	93	90						
12.3 27	14.6 32	12.9 28.4	16.3 36	17.1 38	34.6 76	39.8 88	43.6 96	44.3 98	75.2 166	66.6 147	85.6 189	88.9 196	90.6 200	90 198	118.2 261	132.7 293	242.2 534	242.2 534						
≤64		≤62			≤65		≤63		≤65		≤66		≤65		≤65		≤68							
6150					10,050					33,000					50,000					60,000				
1500					3500					7500					8800					11,000				
500					1550					7500					9500					11,500				

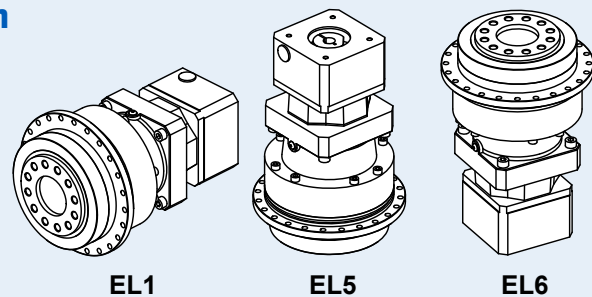
PH Series (A, Q, QA): INLINE — Flange Output

** Size 9 PH/PHA and 10 PH three stage units are designated with PHV or PHVA

PH Series Three-Stage Mounting Position

For all three stage units (PHQ/PHQA: Size 7-11), the amount of lubrication depends on the mounting position.

When ordering any of these three stage units, the mounting position (EL1, EL5 or EL6) **MUST BE SPECIFIED WITH THE ORDER!**



PH Series (A, Q, QA): INLINE — Flange Output

PH Series Motor Mounting Plate Option

(Motor information required with Motor Adapter MT option)

STOBER Servo Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

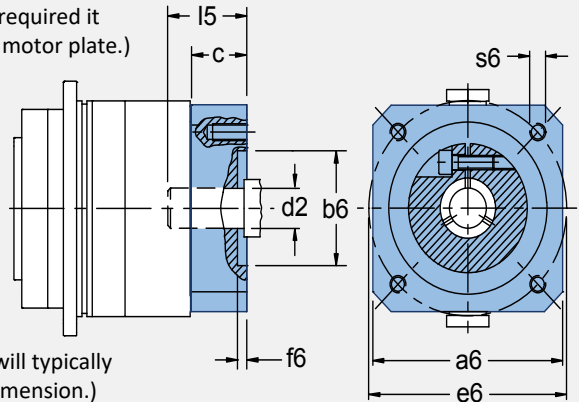
NOTE: When ordering a gearhead:

- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STOBER Technical Support.

Customer Required Dimensions for Properly Sized Motor Mounting Plate

- d2 Motor Shaft Diameter
(If an adapter bushing is required it will be supplied with the motor plate.)
- b6 Pilot Diameter
- e6 Bolt Circle Diameter
- s6 Bolt Diameter
- l5 Motor Shaft Length
- f6 Pilot Length
- a6 Square Flange
(Optional – motor plate will typically be made to match this dimension.)



Motor Mounting Plate Dimensions — mm (Part Number Specific)

d2 Max. Motor Shaft Ø	c Min. Motor Plate Thickness*	Series / Size / # of Stages																		
		3			4		5		7			8			9		10		11	
		1	2		1	2	1	2	1	2	3	1	2	3	2	3	2	3	2	3
14	15	PH	322																	
		PHA	322																	
19	18	PH	321	322...L		422														
		PHA	321	322...L		422														
		PHQ				422														
		PHQA				422														
24	21	PH	321...L		421	422...L		522												
		PHA	321...L		421	422...L		522												
		PHQ			421	422...L		522			723									
		PHQA			421	422...L		522			723									
32	24	PH			421...L		521	522...L		722										
		PHA			421...L		521	522...L		722										
		PHQ			421...L		521	522...L		722	723...L			823						
		PHQA			421...L		521	522...L		722	723...L			823						
38	25	PH					521...L		721	722...L			822							
		PHA					521...L		721	722...L			822							
		PHV													933					
		PHVA													933					
		PHQ					521...L		721	722...L			822	823...L	933					
		PHQA					521...L		721	722...L			822	823...L	933					
48	33	PH										821		932		1032				
		PHA										821		932		1032				
		PHVA																		
		PHQ							721...L				822...L		932	933...L	1033		1133	
		PHQA							721...L				822...L		932	933...L				
60 ¹⁾	43	PHQ												932...L		1032	1033...L	1132	1133...L	
		PHQA												932...L						

* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

¹⁾ Maximum motor shaft diameter is 55 mm for PHQ932...L with ratios above 30:1 and for PHQ1033...L and PHQ1133...L with ratios above 150:1.

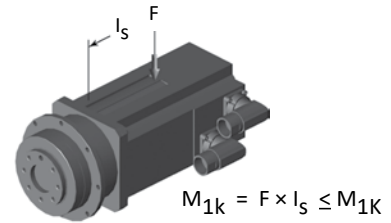
Overview



PH Series Permissible Motor Tilting Torque

The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load "F" from the motor weight, mass acceleration, and vibration

multiplied by the distance from the center of gravity "I_s" of the motor.



M _{1K} Nm	Series / Size / # of Stages																		
	3			4		5		7			8			9		10		11	
	1	2	1	2	1	2	1	2	3	1	2	3	2	3	2	3	2	3	
10	PH	322																	
	PHA	322																	
20	PH	321		422															
	PHA	321		422															
	PHQ			422															
	PHQA			422															
40	PH			421		522													
	PHA			421		522													
	PHQ			421		522			723										
	PHQA			421		522			723										
80	PH					521			722										
	PHA					521			722										
	PHQ					521			722			823							
	PHQA					521			722			823							
200	PH							721			822								
	PHA							721			822								
	PHV												933						
	PHVA												933						
	PHQ							721			822			933					
	PHQA							721			822			933					
400	PH									821			932		1032				
	PHA									821			932		1032				
	PHV														1033				
	PHQ												932		1033		1133		
	PHQA												932		1033		1133		
800	PHQ													1032					
1000	PHQ																	1132	

PH Series (A, Q, QA): INLINE — Flange Output

PH Series Permissible Output Shaft Load and Tilting Moments*

Size	Z ₂ mm	F _{2AMAX} N	F _{2R} N	F _{2RB} N	M _{2K} Nm	M _{2KB} Nm	C _{2K} Nm/arcmin
3	62	1650	1613	1613	100	100	53
4	84	2150	3095	3571	260	300	160
5	97	4150	4536	4897	440	475	380
7	88	6150	17,045	17,045	1500	1500	500
8	126	10,050	27,778	27,778	3500	3500	1550
9	155	33,000	48,387	70,968	7,500	11,000	7500
10	171	50,000	51,462	73,099	8,800	12,500	9500
11	231	60,000	47,619	60,606	11,000	14,000	9500

* Refer to illustration and definitions below.

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2R}, F_{2RB} and M_{2K} can be multiplied by a factor of 2.

PH Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

PH/PHA

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

PHQ/PHQA

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \quad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}} \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application output tilting moment should be determined by the following formula:

$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2KB}$$

$$M_{2ka} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot M_{2kb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot M_{2kbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq M_{2K}$$

$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot F_{2rb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot F_{2rbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq F_{2R}$$

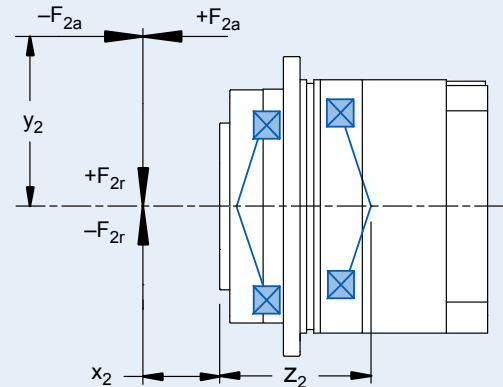
Where:

F_{2a} Axial Load at Output Shaft	M_{2K} Rated Tilting Torque
F_{2A} Permissible Axial Load	M_{2k} Equivalent Tilting Load
F_{2r} Radial Load at Output Shaft	M_{2KB} Acceleration Tilting Torque
F_{2R} Permissible Radial Load	z₂ Distance Factor
F_{2RB} Acceleration Permissible Radial Load	

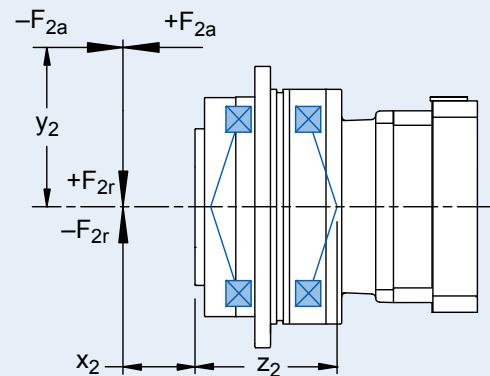
All formulas shown are based on METRIC values

Upper case letters are permissible values. Lower case letters are for existing values.

PH/PHA



PHQ/PHQA



The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle $\leq 40\%$

$$L_h > 10,000 \text{ hours if } M_{2k}/M_{2A} < 1.25 \text{ and } > 1$$

$$L_h > 20,000 \text{ hours if } M_{2k}/M_{2A} > 1.25 \text{ and } > 1.5$$

$$L_h > 30,000 \text{ hours if } M_{2k}/M_{2A} < 1.5$$

bearing life for duty cycle $\geq 40\%$

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}} \right)$$

Selection Data



Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH3 (continued next page)

5.000	45	65	130	≤4	PH321_0050MT	3000	6000	19	0.6	15.9
					PH321_0050MTL			24	1.3	
				≤2	PHA321_0050MF	4000	6000	19	0.6	13.9
					PHA321_0050MFL			24	1.6	15.2
					PHA321_0050MFLC			24	1.6	15.0
7.000	45	60	130	≤4	PH321_0070MT	3500	6000	19	0.6	14.1
					PH321_0070MTL			24	1.3	
				≤2	PHA321_0070MF	4500	6000	19	0.5	13.1
					PHA321_0070MFL			24	1.6	13.7
					PHA321_0070MFLC			24	1.6	13.7
10.00	30	50	100	≤4	PH321_0100MT	3800	6000	19	0.6	11.0
					PH321_0100MTL			24	1.2	
				≤2	PHA321_0100MF	4500	6000	19	0.5	10.7
					PHA321_0100MFL			24	1.6	10.9
					PHA321_0100MFLC			24	1.6	10.9
20.00	45	65	130	≤4	PH322_0200MT	4500	8000	14	0.1	14.7
				PH322_0200MTL	19			0.6	14.9	
				≤2	PHA322_0200MF	4500	8000	14	0.1	14.7
25.00	45	65	130	≤4	PH322_0250MT	4500	8000	14	0.1	14.8
				PH322_0250MTL	19			0.6	14.9	
				≤2	PHA322_0250MF	4500	8000	14	0.1	14.8
28.00	45	60	130	≤4	PH322_0280MT	4500	8000	14	0.1	14.8
				PH322_0280MTL	19			0.6	14.9	
				≤2	PHA322_0280MF	4500	8000	14	0.1	14.8
35.00	45	65	130	≤4	PH322_0350MT	4500	8000	14	0.1	14.6
				PH322_0350MTL	19			0.6	14.7	
				≤2	PHA322_0350MF	4500	8000	14	0.1	14.6
40.00	30	50	100	≤4	PH322_0400MT	4500	8000	14	0.1	12.5
				PH322_0400MTL	19			0.6		
				≤2	PHA322_0400MF	4500	8000	14	0.1	

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH3 (continued from previous page)

50.00	45	65	130	≤4	PH322_0500MT	4500	8000	14	0.1	14.3
					PH322_0500MTL			19	0.6	
				≤2	PHA322_0500MF			14	0.1	
70.00	45	60	130	≤4	PH322_0700MT	4500	8000	14	0.1	14.6
					PH322_0700MTL			19	0.6	
				≤2	PHA322_0700MF			14	0.1	
100.0	30	50	100	≤4	PH322_1000MT	4500	8000	14	0.1	12.4
					PH322_1000MTL			19	0.6	
				≤2	PHA322_1000MF**			14	0.1	

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH4 (continued next page)

4.000	90	130	240	≤3	PH421_0040MT	2300	5000	24	1.7	39.0
					PH421_0040MTL			32	4.0	
					PH421_0040MTLC				3.0	
					PHA421_0040MF**			24	2.0	
				PHA421_0040MFC**	32	5.2				
				PHA421_0040MFL**		33.2				
				PHA421_0040MFLC**	35.1					
				5.000	90	130		240	≤3	PH421_0050MT
PH421_0050MTL	32	3.8								
PH421_0050MTLC		2.8								
PHA421_0050MF	24	1.9								
PHA421_0050MFC		32	5.0							
PHA421_0050MFL			33.5							
PHA421_0050MFLC		34.7								
5.500	120	170	300				≤3		PHQ421_0055MT	2000
				PHQ421_0055MTL	32	3.7				
				PHQ421_0055MTLC		2.8				
				PHQA421_0055MF	24	1.8				
				PHQA421_0055MFC		32	5.0			
				PHQA421_0055MFL			38.0			
				PHQA421_0055MFLC		39.2				
				7.000	90	110	240	≤3	PH421_0070MT	3200
PH421_0070MTL	32	3.6								
PH421_0070MTLC		2.7								
PHA421_0070MF**	24	1.7								
PHA421_0070MFC**		32	4.9							
PHA421_0070MFL**			29.3							
PHA421_0070MFLC**		29.9								

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH4 (continued next page)

10.00	60	100	200	≤3	PH421_0100MT	3500	6000	24	1.3	21.0
					PH421_0100MTL			32	3.6	
					PH421_0100MTLC				2.6	
				≤1	PHA421_0100MF**	3500		24	1.6	20.6
					PHA421_0100MFC**			32	4.8	
					PHA421_0100MFL**					
					PHA421_0100MFLC**					
16.00	90	130	240	≤3	PH422_0160MT	3700	6500	19	0.7	26.7
					PH422_0160MTL			24	1.4	
					PH422_0160MTLC				1.0	
				≤1	PHA422_0160MF**	3700		19	0.6	26.1
					PHA422_0160MFL**			24	1.7	
					PHA422_0160MFLC**					
20.00	90	130	240	≤3	PH422_0200MT	3700	6500	19	0.7	28.9
					PH422_0200MTL			24	1.4	
					PH422_0200MTLC				1.0	
				≤1	PHA422_0200MF	3700		19	0.6	28.5
					PHA422_0200MFL			24	1.7	
					PHA422_0200MFLC					
22.00	120	170	300	≤3	PHQ422_0220MT	3700	6500	19	0.7	37.4
					PHQ422_0220MTL			24	1.4	
					PHQ422_0220MTLC				1.0	
				≤1	PHQA422_0220MF	3700		19	0.6	36.7
					PHQA422_0220MFL			24	1.7	
					PHQA422_0220MFLC					

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH4 (continued next page)

25.00	90	130	240	≤3	PH422_0250MT	4000	7000	19	0.7	28.7
					PH422_0250MTL			24	1.3	
					PH422_0250MTLC			4800	0.9	
				≤1	PHA422_0250MF**	4000		19	0.6	28.4
					PHA422_0250MFL**			24	1.6	28.6
					PHA422_0250MFLC**			4800		
27.50	120	170	300	≤3	PHQ422_0280MT	4000	7000	19	0.7	37.1
					PHQ422_0280MTL			24	1.3	
					PHQ422_0280MTLC			4800	0.9	
				≤1	PHQA422_0280MF	4000		19	0.6	36.7
					PHQA422_0280MFL			24	1.6	37.0
					PHQA422_0280MFLC			4800		36.9
28.00	90	130	240	≤3	PH422_0280MT	4500	8000	19	0.6	25.1
					PH422_0280MTL			24	1.3	
					PH422_0280MTLC			5300	0.9	
				≤1	PHA422_0280MF	4500		19	0.5	24.9
					PHA422_0280MFL			24	1.6	25.0
					PHA422_0280MFLC			5300		
35.00	90	130	240	≤3	PH422_0350MT	4500	8000	19	0.6	27.7
					PH422_0350MTL			24	1.3	
					PH422_0350MTLC			5300	0.9	
				≤1	PHA422_0350MF	4500		19	0.5	27.5
					PHA422_0350MFL			24	1.6	27.6
					PHA422_0350MFLC			5300		
38.50	120	170	300	≤3	PHQ422_0390MT	4500	8000	19	0.6	36.6
					PHQ422_0390MTL			24	1.3	
					PHQ422_0390MTLC			5300	0.9	
				≤1	PHQA422_0390MF	4500		19	0.5	36.3
					PHQA422_0390MFL			24	1.6	36.5
					PHQA422_0390MFLC			5300		

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH4 (continued from previous page)

40.00	90	130	240	≤3	PH422_0400MT	4500	8000	19	0.6	24.2	
					PH422_0400MTL						
					PH422_0400MTLC						
				≤1	PHA422_0400MF	4500		19	0.5		24.1
					PHA422_0400MFL						
					PHA422_0400MFLC						
50.00	90	130	240	≤3	PH422_0500MT	4500	8000	19	0.6	27.0	
					PH422_0500MTL						
					PH422_0500MTLC						
				≤1	PHA422_0500MF**	4500		19	0.5		26.9
					PHA422_0500MFL**						
					PHA422_0500MFLC**						
55.00	120	170	300	≤3	PHQ422_0550MT	4500	8000	19	0.6	35.2	
					PHQ422_0550MTL						
					PHQ422_0550MTLC						
				≤1	PHQA422_0550MF	4500		19	0.5		35.1
					PHQA422_0550MFL						
					PHQA422_0550MFLC						
70.00	90	110	240	≤3	PH422_0700MT	4500	8000	19	0.6	26.8	
					PH422_0700MTL						
					PH422_0700MTLC						
				≤1	PHA422_0700MF	4500		19	0.5		26.7
					PHA422_0700MFL						
					PHA422_0700MFLC						
100.0	60	100	200	≤3	PH422_1000MT	4500	8000	19	0.6	20.0	
					PH422_1000MTL						
					PH422_1000MTLC						
				≤1	PHA422_1000MF**	4500		19	0.5		19.9
					PHA422_1000MFL**						
					PHA422_1000MFLC**						

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm					mm	kgcm ²	Nm

PH5 (continued next page)

4.000	210	320	600	≤3	PH521_0040MT	2200	5000	32	5.1	98.0	
					PH521_0040MTC	3200			6.3	76.7	
					PH521_0040MTL	2200		38	8.1	98.0	
					PH521_0040MTLC	3200			6.3	85.0	
				≤1	PHA521_0040MF	2200		35	6.3	76.7	
					PHA521_0040MFC	3200			38	13.2	85.0
					PHA521_0040MFL	2200				38	13.2
					PHA521_0040MFLC	3200					
5.000	220	320	600	≤3	PH521_0050MT	2500	5500	32	4.5	93.0	
					PH521_0050MTC	3500			5.7	79.5	
					PH521_0050MTL	2500		38	7.5	93.0	
					PH521_0050MTLC	3500			5.7	85.1	
				≤1	PHA521_0050MF**	2500		35	5.7	79.5	
					PHA521_0050MFC**	3500			38	12.6	85.1
					PHA521_0050MFL**	2500				38	12.6
					PHA521_0050MFLC**	3500					
5.500	280	425	800	≤3	PHQ521_0055MT	2500	5500	32	4.4	107.3	
					PHQ521_0055MTC	3500			5.6	92.4	
					PHQ521_0055MTL	2500		38	7.4	107.3	
					PHQ521_0055MTLC	3500			5.6	98.6	
				≤1	PHQA521_0055MF	2500		35	5.6	92.4	
					PHQA521_0055MFC	3500			38	12.5	98.6
					PHQA521_0055MFL	2500				38	12.5
					PHQA521_0055MFLC	3500					
7.000	210	270	598	≤3	PH521_0070MT	3000	6000	32	4.0	77.0	
					PH521_0070MTC	4000			5.2	70.8	
					PH521_0070MTL	3000		38	7.0	77.0	
					PH521_0070MTLC	4000			6.9	73.4	
				≤1	PHA521_0070MF	3000		35	5.2	70.8	
					PHA521_0070MFC	4000			38	12.1	73.4
					PHA521_0070MFL	3000				38	12.1
					PHA521_0070MFLC	4000					

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH5 (continued next page)

10.00	140	250	500	≤3	PH521_0100MT	3300	6000	32	3.7	55.0	
					PH521_0100MTC	4500			4.9	53.4	
					PH521_0100MTL	3300			38	6.8	55.0
					PH521_0100MTLC	4500				6.7	54.1
				≤1	PHA521_0100MF**	3300		35	4.9	53.4	
					PHA521_0100MFC**	4500			38	11.9	54.1
					PHA521_0100MFL**	3300					
					PHA521_0100MFLC**	4500					
16.00	210	320	600	≤3	PH522_0160MT	3300	6000	24	1.5	64.9	
					PH522_0160MTC	4300			1.9	63.7	
					PH522_0160MTL	3300			32	3.8	64.9
					PH522_0160MTLC	4300				2.8	64.1
				≤1	PHA522_0160MF	3300		24	1.9	63.7	
					PHA522_0160MFC	4300			32	5.0	64.1
					PHA522_0160MFL	3300					
					PHA522_0160MFLC	4300					
20.00	220	320	600	≤3	PH522_0200MT	3300	6000	24	1.6	71.0	
					PH522_0200MTC	4300			1.9	70.1	
					PH522_0200MTL	3300			32	3.8	71.0
					PH522_0200MTLC	4300				2.8	70.4
				≤1	PHA522_0200MF	3300		24	1.9	70.1	
					PHA522_0200MFC	4300			32	5.0	70.4
					PHA522_0200MFL	3300					
					PHA522_0200MFLC	4300					
22.00	280	425	800	≤3	PHQ522_0220MT	3300	6000	24	1.6	94.6	
					PHQ522_0220MTC	4300			1.9	93.3	
					PHQ522_0220MTL	3300			32	3.8	94.6
					PHQ522_0220MTLC	4300				2.8	93.8
				≤1	PHQA522_0220MF	3300		24	1.9	93.3	
					PHQA522_0220MFC	4300			32	5.0	93.8
					PHQA522_0220MFL	3300					
					PHQA522_0220MFLC	4300					

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

Selection Data



Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH5 (continued next page)

25.00	220	320	600	≤3	PH522_0250MT	3700	6500	24	1.5	70.6
					PH522_0250MTC	4500			1.8	70.0
					PH522_0250MTL	3700		32	3.7	70.6
					PH522_0250MTLC	4500			2.7	70.2
				≤1	PHA522_0250MF**	3700		24	1.8	70.0
					PHA522_0250MFC**	4500			32	4.9
					PHA522_0250MFL**	3700		32		4.9
					PHA522_0250MFLC**	4500				
27.50	280	425	800	≤3	PHQ522_0280MT	3700	6500	24	1.4	93.7
					PHQ522_0280MTC	4500			1.7	92.9
					PHQ522_0280MTL	3700		32	3.6	93.7
					PHQ522_0280MTLC	4500			2.7	93.2
				≤1	PHQA522_0280MF	3700		24	1.7	92.9
					PHQA522_0280MFC	4500			32	4.9
					PHQA522_0280MFL	3700		32		4.9
					PHQA522_0280MFLC	4500				
28.00	210	320	600	≤3	PH522_0280MT	4000	7000	24	1.3	61.0
					PH522_0280MTC	5000			1.7	60.7
					PH522_0280MTL	4000		32	3.6	61.0
					PH522_0280MTLC	5000			2.6	60.8
				≤1	PHA522_0280MF	4000		24	1.6	60.6
					PHA522_0280MFC	5000			32	4.8
					PHA522_0280MFL	4000		32		4.8
					PHA522_0280MFLC	5000				
35.00	220	320	600	≤3	PH522_0350MT	4000	7000	24	1.3	68.0
					PH522_0350MTC	5000			1.7	67.7
					PH522_0350MTL	4000		32	3.6	68.0
					PH522_0350MTLC	5000			2.6	67.8
				≤1	PHA522_0350MF	4000		24	1.6	67.6
					PHA522_0350MFC	5000			32	4.8
					PHA522_0350MFL	4000		32		4.8
					PHA522_0350MFLC	5000				

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH5 (continued next page)

38.50	280	425	800	≤3	PHQ522_0390MT	4000	7000	24	1.3	91.6
					PHQ522_0390MTC	5000			1.7	91.2
					PHQ522_0390MTL	4000		32	3.6	91.6
					PHQ522_0390MTLC	5000			2.6	91.3
				≤1	PHQA522_0390MF	4000		24	1.6	91.1
					PHQA522_0390MFC	5000			32	4.8
					PHQA522_0390MFL	4000		32		4.8
					PHQA522_0390MFLC	5000			4.8	91.3
40.00	210	320	600	≤3	PH522_0400MT	4000	7000	24	1.3	58.3
					PH522_0400MTC	5000			1.6	58.2
					PH522_0400MTL	4000		32	3.5	58.3
					PH522_0400MTLC	5000			2.5	58.2
				≤1	PHA522_0400MF	4000		24	1.6	58.1
					PHA522_0400MFC	5000			32	4.7
					PHA522_0400MFL	4000		32		4.7
					PHA522_0400MFLC	5000			4.7	58.2
50.00	220	320	600	≤3	PH522_0500MT	4000	7000	24	1.3	65.8
					PH522_0500MTC	5000			1.6	65.7
					PH522_0500MTL	4000		32	3.5	65.8
					PH522_0500MTLC	5000			2.5	65.7
				≤1	PHA522_0500MF	4000		24	1.6	65.6
					PHA522_0500MFC	5000			32	4.8
					PHA522_0500MFL	4000		32		4.8
					PHA522_0500MFLC	5000			4.8	65.7
55.00	280	425	800	≤3	PHQ522_0550MT	4000	7000	24	1.3	87.2
					PHQ522_0550MTC	5000			1.6	87.0
					PHQ522_0550MTL	4000		32	3.5	87.2
					PHQ522_0550MTLC	5000			2.5	87.1
				≤1	PHQA522_0550MF	4000		24	1.6	87.0
					PHQA522_0550MFC	5000			32	4.7
					PHQA522_0550MFL	4000		32		4.7
					PHQA522_0550MFLC	5000			4.7	87.1

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH5 (continued from previous page)

70.00	210	270	598	≤3	PH522_0700MT	4000	7000	24	1.3	65.6	
					PH522_0700MTC	5000			1.6	65.5	
					PH522_0700MTL	4000		32	3.5	65.6	
					PH522_0700MTLC	5000			2.5	65.5	
				≤1	PHA522_0700MF**	4000		24	1.6		65.5
					PHA522_0700MFC**	5000					
					PHA522_0700MFL**	4000		32	4.7		
					PHA522_0700MFLC**	5000					
100.0	140	250	500	≤3	PH522_1000MT	4000	7000	24	1.3	51.8	
					PH522_1000MTC	5000			1.6		
					PH522_1000MTL	4000		32	3.5		
					PH522_1000MTLC	5000			2.5		
				≤1	PHA522_1000MF	4000		24	1.6		
					PHA522_1000MFC	5000					
					PHA522_1000MFL	4000		32	4.7		
					PHA522_1000MFLC	5000					

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

4.000	440	700	1367	≤3	PH721_0040MT	1900	4000	38	11.2	185.0			
					PH721_0040MTC	2400			19.6	143.5			
					PH721_0040MTL	1900			48	29.0	185.0		
					PH721_0040MTLC	2400				21.8	160.0		
			1321	≤1	PHA721_0040MF	1900		38	16.6	143.5			
					PHA721_0040MFC	2400			19.6				
					1367	≤1			PHA721_0040MFL	1900	48	35.4	160.0
									PHA721_0040MFLC	2400			
5.000	440	700	1400	≤3	PH721_0050MT	2200	5000	38	9.3	184.0			
					PH721_0050MTC	3000			17.8	155.4			
					PH721_0050MTL	2200			48	27.2	184.0		
					PH721_0050MTLC	3000				19.9	167.4		
			1367	≤1	PHA721_0050MF**	2200		38	14.8	155.4			
					PHA721_0050MFC**	3000			17.8				
					1367	≤1			PHA721_0050MFL**	2200	48	33.6	167.4
									PHA721_0050MFLC**	3000			
5.500	650	950	1700	≤3	PHQ721_0055MT	2200	5000	38	9.1	235.0			
					PHQ721_0055MTC	3000			17.5	196.8			
					PHQ721_0055MTL	2200			48	26.9	235.0		
					PHQ721_0055MTLC	3000				19.7	212.7		
			1816	≤1	PHQA721_0055MF	2200		38	14.5	196.8			
					PHQA721_0055MFC	3000			17.5				
					1900	≤1			PHQA721_0055MFL	2200	48	33.3	212.7
									PHQA721_0055MFLC	3000			
7.000	440	650	1241	≤3	PH721_0070MT	2500	5000	38	7.9	160.0			
					PH721_0070MTC	3500			16.0	145.2			
					PH721_0070MTL	2500			48	26.2	160.0		
					PH721_0070MTLC	3500				16.4	152.1		
			1242	≤1	PHA721_0070MF	2500		38	13.0	145.2			
					PHA721_0070MFC	3500			16.0				
					1241	≤1			PHA721_0070MFL	2500	48	32.2	152.1
									PHA721_0070MFLC	3500			

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

Selection Data



Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

10.00	300	500	1000	≤3	PH721_0100MT	3000	5000	38	7.2	117.0	
					PH721_0100MTC	4000			15.3	112.9	
					PH721_0100MTL	3000			48	25.5	117.0
					PH721_0100MTLC	4000				15.7	114.9
				≤1	PHA721_0100MF**	3000		38	12.3	112.9	
					PHA721_0100MFC**	4000			15.3		
					PHA721_0100MFL**	3000			48	31.5	114.9
					PHA721_0100MFLC**	4000					
16.00	440	700	1326	≤3	PH722_0160MT	3000	5000	32	4.7	136.0	
					PH722_0160MTC	4000			6.0	132.8	
					PH722_0160MTL	3000			38	7.7	136.0
					PH722_0160MTLC	4000				5.9	134.2
			1367	≤1	PHA722_0160MF	3000		32	6.0	132.8	
					PHA722_0160MFC	4000					
					PHA722_0160MFL	3000			38	12.8	134.2
					PHA722_0160MFLC	4000					
20.00	440	700	1400	≤3	PH722_0200MT	3000	5000	32	4.6	149.7	
					PH722_0200MTC	4000			5.9	147.2	
					PH722_0200MTL	3000			38	7.6	149.7
					PH722_0200MTLC	4000				5.8	148.3
			≤1	PHA722_0200MF	3000	32		5.9	147.2		
				PHA722_0200MFC	4000						
				PHA722_0200MFL	3000			38	12.7	148.3	
				PHA722_0200MFLC	4000						
22.00	650	950	1700	≤3	PHQ722_0220MT	3000	5000	32	4.7	207.4	
					PHQ722_0220MTC	4000			6.0	203.4	
					PHQ722_0220MTL	3000			38	7.7	207.4
					PHQ722_0220MTLC	4000				5.9	205.2
			1900	≤1	PHQA722_0220MF	3000		32	6.0	203.4	
					PHQA722_0220MFC	4000					
					PHQA722_0220MFL	3000			38	12.8	205.2
					PHQA722_0220MFLC	4000					

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

25.00	440	700	1400	≤3	PH722_0250MT	3500	6000	32	4.2	148.8		
					PH722_0250MTC	4200			5.5	147.2		
					PH722_0250MTL	3500			38	7.2	148.8	
					PH722_0250MTLC	4200				5.4	147.9	
				≤1	PHA722_0250MF**	3500		32	5.5	147.2		
					PHA722_0250MFC**	4200			38	12.3	147.9	
					PHA722_0250MFL**	3500				38	12.3	147.9
					PHA722_0250MFLC**	4200					12.3	147.9
27.50	650	950	1700	≤3	PHQ722_0280MT	3500	6000	32		4.2	205.8	
					PHQ722_0280MTC	4200			5.5	203.3		
					PHQ722_0280MTL	3500			38	7.2	205.8	
					PHQ722_0280MTLC	4200				204.4		
			1900	≤1	PHQA722_0280MF	3500		32	5.5	203.3		
					PHQA722_0280MFC	4200			38	12.4	204.4	
					PHQA722_0280MFL	3500				38	12.4	204.4
					PHQA722_0280MFLC	4200					12.4	204.4
28.00	440	700	1367	≤3	PH722_0280MT	3700	6500	32		3.9	130.9	
					PH722_0280MTC	4500			5.1	129.7		
					PH722_0280MTL	3700			38	6.9	130.9	
					PH722_0280MTLC	4500				6.8	130.3	
				≤1	PHA722_0280MF	3700		32	5.1	129.7		
					PHA722_0280MFC	4500			38	12.0	130.3	
					PHA722_0280MFL	3700				38	12.0	130.3
					PHA722_0280MFLC	4500					12.0	130.3
35.00	440	700	1400	≤3	PH722_0350MT	3700	6500	32		3.8	145.7	
					PH722_0350MTC	4500			5.0	144.7		
					PH722_0350MTL	3700			38	6.9	145.7	
					PH722_0350MTLC	4500				6.8	145.2	
				≤1	PHA722_0350MF	3700		32	5.0	144.7		
					PHA722_0350MFC	4500			38	12.0	145.2	
					PHA722_0350MFL	3700				38	12.0	145.2
					PHA722_0350MFLC	4500					12.0	145.2

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

Selection Data



Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

38.50	650	950	1700	≤3	PHQ722_0390MT	3700	6500	32	3.8	202.7				
					PHQ722_0390MTC	4500			5.1	201.2				
					PHQ722_0390MTL	3700			38	6.9	202.7			
					PHQ722_0390MTLC	4500				6.8	201.8			
			1900	≤1	PHQA722_0390MF	3700		32	5.1	201.2				
					PHQA722_0390MFC	4500			38	12.0	201.8			
					PHQA722_0390MFL	3700								
					PHQA722_0390MFLC	4500								
40.00	440	700	1367	≤3	PH722_0400MT	3700	6500	32	3.7	126.5				
					PH722_0400MTC	4700			4.9	125.9				
					PH722_0400MTL	3700			38	6.7	126.5			
					PH722_0400MTLC	4700				6.6	126.2			
								≤1	PHA722_0400MF	3700	32	4.9	125.9	
									PHA722_0400MFC	4700		38	11.8	126.2
									PHA722_0400MFL	3700				
									PHA722_0400MFLC	4700				
50.00	440	700	1400	≤3	PH722_0500MT	3700	6500	32	3.6	142.2				
					PH722_0500MTC	4700			4.9	141.7				
					PH722_0500MTL	3700			38	6.7	142.2			
					PH722_0500MTLC	4700				6.6	141.9			
								≤1	PHA722_0500MF**	3700	32	4.9	141.7	
									PHA722_0500MFC**	4700		38	11.8	141.9
									PHA722_0500MFL**	3700				
									PHA722_0500MFLC**	4700				
55.00	650	950	1700	≤3	PHQ722_0550MT	3700	6500	32	3.7	195.4				
					PHQ722_0550MTC	4700			4.9	194.7				
					PHQ722_0550MTL	3700			38	6.7	195.4			
					PHQ722_0550MTLC	4700				6.6	195.0			
			1900	≤1	PHQA722_0550MF	3700		32	4.9	194.7				
					PHQA722_0550MFC	4700			38	11.8	195.0			
					PHQA722_0550MFL	3700								
					PHQA722_0550MFLC	4700								

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

70.00	440	650	1241	≤3	PH722_0700MT	3700	6500	32	3.6	141.5	
					PH722_0700MTC	4700			4.9	141.3	
					PH722_0700MTL	3700			38	6.7	141.5
					PH722_0700MTLC	4700				6.6	141.4
			1242	≤1	PHA722_0700MF	3700		32	4.9	141.3	
					PHA722_0700MFC	4700					
					PHA722_0700MFL	3700			38	11.8	141.4
					PHA722_0700MFLC	4700					
88.00	650	950	1700	≤3	PHQ723_0880MT	3300	6000	24	1.6	204.1	
					PHQ723_0880MTC	4300			1.9	203.7	
					PHQ723_0880MTL	3300			32	3.9	204.1
					PHQ723_0880MTLC	4300				2.9	203.8
			1900	≤1	PHQA723_0880MF	3300		24	1.9	203.7	
					PHQA723_0880MFC	4300					
					PHQA723_0880MFL	3300			32	5.1	203.8
					PHQA723_0880MFLC	4300					
100.0	300	500	1000	≤3	PH722_1000MT	3700	6500	32	3.6	111.8	
					PH722_1000MTC	4700			4.9	111.7	
					PH722_1000MTL	3700			38	6.7	111.8
					PH722_1000MTLC	4700				6.6	111.7
			1000	≤1	PHA722_1000MF	3700		32	4.9		
					PHA722_1000MFC	4700					
					PHA722_1000MFL	3700			38	11.8	
					PHA722_1000MFLC	4700					
110.0	650	950	1700	≤3	PHQ723_1100MT	3300	6000	24	1.6	203.7	
					PHQ723_1100MTC	4300			1.9	203.5	
					PHQ723_1100MTL	3300			32	3.8	203.7
					PHQ723_1100MTLC	4300				2.8	203.6
			1900	≤1	PHQA723_1100MF	3300		24	1.9	203.5	
					PHQA723_1100MFC	4500					
					PHQA723_1100MFL	3300			32	5.1	203.6
					PHQA723_1100MFLC	4500					

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

Selection Data



Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

137.5	650	950	1700	≤3	PHQ723_1380MT	3700	6500	24	1.5	203.6	
					PHQ723_1380MTC	4500			1.8	203.4	
					PHQ723_1380MTL	3700			32	3.7	203.6
					PHQ723_1380MTLC	4500				2.7	203.5
			PHQA723_1380MF	3700	1900	≤1		24	1.8	203.4	
			PHQA723_1380MFC	4500				32	4.9	203.5	
			PHQA723_1380MFL	3700							
			PHQA723_1380MFLC	4500							
154.0	650	950	1700	≤3	PHQ723_1540MT	4000	7000	24	1.3	203.2	
					PHQ723_1540MTC	5000			1.7	203.1	
					PHQ723_1540MTL	4000			32	3.6	203.2
					PHQ723_1540MTLC	5000				2.6	203.1
			PHQA723_1540MF	4000	1900	≤1		24	1.7	203.0	
			PHQA723_1540MFC	5000				32	4.8	203.1	
			PHQA723_1540MFL	4000							
			PHQA723_1540MFLC	5000							
192.5	650	950	1700	≤3	PHQ723_1930MT	4000	7000	24	1.3	203.2	
					PHQ723_1930MTC	5000			1.7	203.1	
					PHQ723_1930MTL	4000			32	3.6	203.2
					PHQ723_1930MTLC	5000				2.6	203.1
			PHQA723_1930MF	4000	1900	≤1		24	1.6	203.0	
			PHQA723_1930MFC	5000				32	4.8	203.1	
			PHQA723_1930MFL	4000							
			PHQA723_1930MFLC	5000							
220.0	650	950	1700	≤3	PHQ723_2200MT	4000	7000	24	1.3	201.8	
					PHQ723_2200MTC	5000			1.6	201.7	
					PHQ723_2200MTL	4000			32	3.6	201.8
					PHQ723_2200MTLC	5000				2.6	201.7
			PHQA723_2200MF	4000	1900	≤1		24	1.6		
			PHQA723_2200MFC	5000				32	4.8		
			PHQA723_2200MFL	4000							
			PHQA723_2200MFLC	5000							

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm			arcmin	mm			

PH7 (continued from previous page)

275.0	650	950	1700	≤3	PHQ723_2750MT	4000	7000	24	1.3	202.2
					PHQ723_2750MTC	5000			1.6	
					PHQ723_2750MTL	4000		32	3.5	
					PHQ723_2750MTLC	5000			2.5	
			1900	≤1	PHQA723_2750MF	4000		24	1.6	
					PHQA723_2750MFC	5000				
					PHQA723_2750MFL	4000		32	4.8	
					PHQA723_2750MFLC	5000				
385.0	650	950	1700	≤3	PHQ723_3850MT	4000	7000	24	1.3	200.9
					PHQ723_3850MTC	5000			1.6	200.8
					PHQ723_3850MTL	4000		32	3.5	200.9
					PHQ723_3850MTLC	5000			2.6	
			1900	≤1	PHQA723_3850MF	4000		24	1.6	
					PHQA723_3850MFC	5000				
					PHQA723_3850MFL	4000		32	4.8	
					PHQA723_3850MFLC	5000				
550.0	650	950	1700	≤3	PHQ723_5500MT	4000	7000	24	1.3	194.6
					PHQ723_5500MTC	5000			1.6	
					PHQ723_5500MTL	4000		32	3.5	
					PHQ723_5500MTLC	5000			2.6	
			1900	≤1	PHQA723_5500MF	4000		24	1.6	
					PHQA723_5500MFC	5000				
					PHQA723_5500MFL	4000		32	4.7	
					PHQA723_5500MFLC	5000				

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH8 (continued next page)

4.000	881	1600	2308	≤3	PH821_0040MT	1500	3500	48	48.9	634.0			
					PH821_0040MTC	2200			54.0				
				≤1	PHA821_0040MF	1500			54.8		412.9		
					PHA821_0040MFC	2200			54.0				
5.000	1101	1700	2870	≤3	PH821_0050MT	1700	4000	48	39.9	566.0			
					PH821_0050MTC	2500			45.1				
				≤1	PHA821_0050MF**	1700			45.8		433.4		
					PHA821_0050MFC**	2500			45.1				
7.000	1000	1600	2772	≤3	PH821_0070MT	2000	4000	48	32.0	474.0			
					PH821_0070MTC	3200			37.6				
				≤1	PHA821_0070MF	2000			38.4		410.9		
					PHA821_0070MFC	3200			37.6				
10.00	800	1200	2400	≤3	PH821_0100MT	2500	4000	48	28.2	317.0			
					PH821_0100MTC	3700	4500		33.8				
				≤1	PHA821_0100MF	2500	4000		34.6		301.8		
					PHA821_0100MFC	3700	4500		33.8				
16.00	1100	2000	2756	≤3	PH822_0160MT	2500	4500	38	11.1	451.6			
			3145		PH822_0160MTC	3250			48		19.6	432.5	
					PH822_0160MTL	2500					29.0		451.6
					PH822_0160MTLC	3250					21.7		
				≤1	PHA822_0160MF**	2500		38		16.6	432.5		
			PHA822_0160MFC**		3250	48			35.4	441.1			
			PHA822_0160MFL**		2500								
			PHA822_0160MFLC**		3250								
20.00	1250	2000	3200	≤3	PH822_0200MT	2500	4500	38	10.6	459.5			
					PH822_0200MTC	3300			48		19.0	446.6	
					PH822_0200MTL	2500					28.4		459.5
					PH822_0200MTLC	3300					21.1		
				≤1	PHA822_0200MF	2500		38		16.0	446.6		
					PHA822_0200MFC	3300			48	34.8		452.4	
					PHA822_0200MFL	2500							
					PHA822_0200MFLC	3300							

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH8 (continued next page)

22.00	1700	2600	4000	≤3	PHQ822_0220MT	2500	4500	38	11.0	661.0	
					PHQ822_0220MTC	3300			19.4	639.2	
					PHQ822_0220MTL	2500			48	28.8	661.0
					PHQ822_0220MTLC	3300				21.6	649.0
				≤1	PHQA822_0220MF	2500		38	16.4	639.2	
					PHQA822_0220MFC	3300			48	35.3	649.0
					PHQA822_0220MFL	2500					
					PHQA822_0220MFLC	3300					
25.00	1250	2000	3200	≤3	PH822_0250MT	3000	5500	38	9.1	484.4	
					PH822_0250MTC	3800			17.5	475.2	
					PH822_0250MTL	3000			48	26.9	484.4
					PH822_0250MTLC	3800				19.6	479.4
				≤1	PHA822_0250MF	3000		38	14.5	475.2	
					PHA822_0250MFC	3800			48	33.3	479.4
					PHA822_0250MFL	3000					
					PHA822_0250MFLC	3800					
27.50	1700	2600	4000	≤3	PHQ822_0280MT	3000	5500	38	9.3	656.0	
					PHQ822_0280MTC	3800			17.7	642.1	
					PHQ822_0280MTL	3000			48	27.1	656.0
					PHQ822_0280MTLC	3800				19.8	648.4
			4400	≤1	PHQA822_0280MF	3000		38	14.7	642.1	
					PHQA822_0280MFC	3800			48	33.5	648.4
					PHQA822_0280MFL	3000					
					PHQA822_0280MFLC	3800					
28.00	1100	2000	3145	≤3	PH822_0280MT	3300	6000	38	8.0	434.7	
					PH822_0280MTC	4000			16.1	427.3	
					PH822_0280MTL	3300			48	26.3	434.7
					PH822_0280MTLC	4000				16.4	430.9
				≤1	PHA822_0280MF	3300		38	13.1	427.3	
					PHA822_0280MFC	4000			48	32.2	430.9
					PHA822_0280MFL	3300					
					PHA822_0280MFLC	4000					

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

Selection Data



Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm					mm	kgcm ²	Nm

PH8 (continued next page)

35.00	1250	2000	3200	≤3	PH822_0350MT	3300	6000	38	7.8	448.1	
					PH822_0350MTC	4000			15.9	443.1	
					PH822_0350MTL	3300			48	26.1	448.1
					PH822_0350MTLC	4000				16.2	445.6
				≤1	PHA822_0350MF	3300		38	12.9	443.1	
					PHA822_0350MFC	4000			48	32.0	445.6
					PHA822_0350MFL	3300				48	32.0
					PHA822_0350MFLC	4000					
38.50	1700	2600	4000	≤3	PHQ822_0390MT	3300	6000	38	7.9	643.0	
					PHQ822_0390MTC	4000			16.0	634.4	
					PHQ822_0390MTL	3300			48	26.2	643.0
					PHQ822_0390MTLC	4000				16.3	638.6
			≤1	PHQA822_0390MF	3300	38		13.0	634.4		
				PHQA822_0390MFC	4000			48	32.1	638.6	
				PHQA822_0390MFL	3300				48	32.1	638.6
				PHQA822_0390MFLC	4000						
40.00	1100	1920	3145	≤3	PH822_0400MT	3300	6000	38	7.2	417.7	
					PH822_0400MTC	4300			15.4	414.3	
					PH822_0400MTL	3300			48	25.6	417.7
					PH822_0400MTLC	4300				15.7	415.9
			≤1	PHA822_0400MF	3300	38		12.4	414.3		
				PHA822_0400MFC	4300			48	31.5	415.9	
				PHA822_0400MFL	3300				48	31.5	415.9
				PHA822_0400MFLC	4300						
50.00	1250	2000	3200	≤3	PH822_0500MT	3300	6000	38	7.2	436.4	
					PH822_0500MTC	4300			15.3	434.0	
					PH822_0500MTL	3300			48	25.5	436.4
					PH822_0500MTLC	4300				15.6	435.2
			≤1	PHA822_0500MF	3300	38		12.3	434.0		
				PHA822_0500MFC	4300			48	31.4	435.2	
				PHA822_0500MFL	3300				48	31.4	435.2
				PHA822_0500MFLC	4300						

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH8 (continued next page)

55.00	1584	2600	4000	≤3	PHQ822_0550MT	3300	6000	38	7.2	615.0	
					PHQ822_0550MTC	4300			15.3	611.1	
					PHQ822_0550MTL	3300			48	25.5	615.0
					PHQ822_0550MTLC	4300				15.7	613.0
			4400	≤1	PHQA822_0550MF	3300		38	12.3	611.1	
					PHQA822_0550MFC	4300			48	31.5	613.0
					PHQA822_0550MFL	3300					
					PHQA822_0550MFLC	4300					
70.00	1000	1600	2772	≤3	PH822_0700MT	3300	6000	38	7.1	420.7	
					PH822_0700MTC	4300			15.2	419.6	
					PH822_0700MTL	3300			48	25.4	420.7
					PH822_0700MTLC	4300				15.5	420.2
			≤1	PHA822_0700MF**	3300	38		12.2	419.6		
				PHA822_0700MFC**	4300						
				PHA822_0700MFL**	3300			48	31.3	420.2	
				PHA822_0700MFLC**	4300						
88.00	1700	2600	4000	≤3	PHQ823_0880MT	3000	6000	32	4.8	647.0	
					PHQ823_0880MTC	4500			6.1	644.6	
					PHQ823_0880MTL	3000			38	7.8	647.0
					PHQ823_0880MTLC	4500				6.0	645.7
			4400	≤1	PHQA823_0880MF	3000		32	6.1	644.6	
					PHQA823_0880MFC	4500					
					PHQA823_0880MFL	3000			38	12.9	645.7
					PHQA823_0880MFLC	4500					
100.0	800	1200	2400	≤3	PH822_1000MT	3300	6000	38	7.0	304.5	
					PH822_1000MTC	4300			15.2	304.2	
					PH822_1000MTL	3300			48	25.3	304.5
					PH822_1000MTLC	4300				15.5	304.4
			≤1	PHA822_1000MF	3300	38		12.2	304.2		
				PHA822_1000MFC	4300						
				PHA822_1000MFL	3300			48	31.3	304.4	
				PHA822_1000MFLC	4300						

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm					mm	kgcm ²	Nm

PH8 (continued next page)

110.0	1700	2600	4000	≤3	PHQ823_1100MT	3000	5000	32	4.7	647.0
					PHQ823_1100MTC	4500	6000		6.0	645.4
					PHQ823_1100MTL	3000	5000	38	7.7	647.0
					PHQ823_1100MTLC	4500	6000		5.9	646.1
			4400	≤1	PHQA823_1100MF	3500	6000	32	6.0	645.4
					PHQA823_1100MFC	4500			6.0	645.4
					PHQA823_1100MFL	3500		38	12.8	646.1
					PHQA823_1100MFLC	4500			12.8	646.1
137.5	1700	2600	4000	≤3	PHQ823_1380MT	3500	6000	32	4.2	646.0
					PHQ823_1380MTC	5000			5.5	645.0
					PHQ823_1380MTL	3500		38	7.3	646.0
					PHQ823_1380MTLC	5000			645.4	
			4400	≤1	PHQA823_1380MF	3500	6000	32	5.5	645.0
					PHQA823_1380MFC	5000			5.5	645.0
					PHQA823_1380MFL	3500		38	12.4	645.4
					PHQA823_1380MFLC	5000			12.4	645.4
154.0	1700	2600	4000	≤3	PHQ823_1540MT	3700	6500	32	3.9	645.0
					PHQ823_1540MTC	5000			5.1	644.0
					PHQ823_1540MTL	3700		38	6.9	645.0
					PHQ823_1540MTLC	5000			6.8	644.5
			4400	≤1	PHQA823_1540MF	3700	6500	32	5.1	644.0
					PHQA823_1540MFC	5000			5.1	644.0
					PHQA823_1540MFL	3700		38	12.0	644.5
					PHQA823_1540MFLC	5000			12.0	644.5
192.5	1700	2600	4000	≤3	PHQ823_1930MT	3700	6500	32	3.8	645.0
					PHQ823_1930MTC	5000			5.1	644.4
					PHQ823_1930MTL	3700		38	6.9	645.0
					PHQ823_1930MTLC	5000			6.8	644.6
			4400	≤1	PHQA823_1930MF	3700	6500	32	5.1	644.4
					PHQA823_1930MFC	5000			5.1	644.4
					PHQA823_1930MFL	3700		38	12.0	644.6
					PHQA823_1930MFLC	5000			12.0	644.6

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm			arcmin	mm			

PH8 (continued from previous page)

220.0	1700	2600	4000	≤3	PHQ823_2200MT	3700	6500	32	3.7	641.0	
					PHQ823_2200MTC	5500			4.9	640.5	
					PHQ823_2200MTL	3700			38	6.7	641.0
					PHQ823_2200MTLC	5500				6.6	640.7
			4400	≤1	PHQA823_2200MF	3700		32	4.9	640.5	
					PHQA823_2200MFC	5500			38	11.8	640.7
					PHQA823_2200MFL	3700					
					PHQA823_2200MFLC	5500					
275.0	1700	2600	4000	≤3	PHQ823_2750MT	3700	6500	32	3.7	643.0	
					PHQ823_2750MTC	5500			4.9	642.7	
					PHQ823_2750MTL	3700			38	6.7	643.0
					PHQ823_2750MTLC	5500				6.6	642.8
			4400	≤1	PHQA823_2750MF	3700		32	4.9	642.7	
					PHQA823_2750MFC	5500			38	11.8	642.8
					PHQA823_2750MFL	3700					
					PHQA823_2750MFLC	5500					
385.0	1700	2600	4000	≤3	PHQ823_3850MT	3700	6500	32	3.6	635.0	
					PHQ823_3850MTC	5500			4.9	634.8	
					PHQ823_3850MTL	3700			38	6.7	635.0
					PHQ823_3850MTLC	5500				6.6	634.9
			4400	≤1	PHQA823_3850MF	3700		32	4.9	634.8	
					PHQA823_3850MFC	5500			38	11.8	634.9
					PHQA823_3850MFL	3700					
					PHQA823_3850MFLC	5500					
550.0	1584	2600	4000	≤3	PHQ823_5500MT	3700	6500	32	3.6	611.0	
					PHQ823_5500MTC	5500			4.9	610.9	
					PHQ823_5500MTL	3700			38	6.7	611.0
					PHQ823_5500MTLC	5500				6.6	
			4400	≤1	PHQA823_5500MF	3700		32	4.9	610.9	
					PHQA823_5500MFC	5500			38	11.8	611.0
					PHQA823_5500MFL	3700					
					PHQA823_5500MFLC	5500					

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued next page)

12.00	3000	4608	6743	≤3	PH932_0120MT	1800	3000	48	74.9	1239.5				
					PH932_0120MTC	2700			80.1	1110.4				
					PH932_0120MTL	1800			102.5	1239.5				
					PH932_0120MTLC	2700					1201.2			
				≤1	PHA932_0120MF	1800	48	80.9	1110.4					
					PHA932_0120MFC	2700								
16.00	3000	5000	8956	≤3	PH932_0160MT	2200	3500	48	44.4	1211.8				
					PH932_0160MTC	2900			50.0	1139.0				
					PH932_0160MTL	2200			72.4	1211.8				
					PH932_0160MTLC	2900					1191.0			
				≤1	PHA932_0160MF	2200	48	52.7	1139.0					
					PHA932_0160MFC	2900								
18.00	3000	4500	6939	≤3	PH932_0180MT	1800	3000	48	68.4	1135.0				
					PH932_0180MTC	2700			74.0	1083.7				
					PH932_0180MTL	1800			96.5	1135.0				
			PH932_0180MTLC		2700	1120.4								
			≤1	PHA932_0180MF	1800	48		74.8	1083.7					
				PHA932_0180MFC	2700									
	3800	5551	6939	≤3	PHQ932_0180MT		1800			4500	48	70.9	1237.4	
					PHQ932_0180MTC		3000					4500	76.5	1176.7
					PHQ932_0180MTL		1800					3000	98.9	1237.4
		PHQ932_0180MTLC	3000		4500		1220.2							
		6000	10115	12000	≤1	PHQA932_0180MF	1800	3000	48		77.2	1176.7		
						PHQA932_0180MFC	3000	4500						
10496	≤3				PHQ932_0180MTC	3000	4500	55		98.9			1220.2	
20.00	3000	5000	7710	≤3	PH932_0200MT	2500	4000	48	36.8	1187.6				
					PH932_0200MTC	3300			42.4	1141.8				
					PH932_0200MTL	2500			64.8	1187.6				
			PH932_0200MTLC		3300	1174.7								
			≤1	PHA932_0200MF	2500	48		43.9	1141.8					
				PHA932_0200MFC	3300									

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued next page)

24.00	3000	4500	9000	≤3	PH932_0240MT	2200	3500	48	41.0	1124.5	
					PH932_0240MTC	2900			46.6	1095.6	
					PH932_0240MTL	2200			60	69.0	1124.5
					PH932_0240MTLC	2900					1116.4
				≤1	PHA932_0240MF	2200		48	49.3	1095.6	
	PHA932_0240MFC	2900									
	3800	6000	12000	≤3	PHQ932_0240MT	2200	5000	48	42.1	1225.0	
					PHQ932_0240MTC	3200			47.7	1190.8	
					PHQ932_0240MTL	2200			60	70.1	1225.0
					PHQ932_0240MTLC	3200					1215.5
≤1				PHQA932_0240MF	2200	48		48.5	1190.8		
PHQA932_0240MFC	3200										
28.00	3000	5000	10000	≤3	PH932_0280MT	2800	4500	48	30.7	1146.6	
					PH932_0280MTC	4000			36.3	1120.6	
					PH932_0280MTL	2800			60	58.7	1146.6
					PHA932_0280MF	2800					
				≤1	PHA932_0280MFC	4000		48	37.5	1120.6	
30.00	3000	4500	9000	≤3	PH932_0300MT	2500	4000	48	34.6	1115.1	
					PH932_0300MTC	3500			40.2	1096.8	
					PH932_0300MTL	2500			60	62.6	1115.1
					PH932_0300MTLC	3500					1110.0
				≤1	PHA932_0300MF	2500		48	41.7	1096.8	
	PHA932_0300MFC	3500									
	3800	6000	12000	≤3	PHQ932_0300MT	2500	6000	48	35.2	1213.9	
					PHQ932_0300MTC	3750			40.8	1192.2	
					PHQ932_0300MTL	2500			60	63.2	1213.9
					PHQ932_0300MTLC	3750					1207.9
≤1				PHQA932_0300MF	2500	48		41.6	1192.2		
PHQA932_0300MFC	3750										
32.00	3000	4608	9216	≤3	PH932_0320MT	2800	4500	48	29.4	1111.7	
					PH932_0320MTC	4000			35.0	1092.8	
					PH932_0320MTL	2800			60	57.4	1111.7
					PHA932_0320MF	2800					
				≤1	PHA932_0320MFC	4000		48	35.8	1092.8	

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued next page)

40.00	2688	4608	9216	≤3	PH932_0400MT	2800	4500	48	27.2	1056.9
					PH932_0400MTC	4000			32.8	1046.0
					PH932_0400MTL	2800			55.2	1056.9
				≤1	PHA932_0400MF	2800		48	34.1	1046.0
					PHA932_0400MFC	4000				
42.00	3000	4500	9000	≤3	PH932_0420MT	2800	4500	48	29.6	1098.7
					PH932_0420MTC	4000			35.2	1088.0
					PH932_0420MTL	2800			57.6	1098.7
				≤1	PHA932_0420MF	2800		48	36.4	1088.0
					PHA932_0420MFC	4000				
	3800	6000	12000	≤3	PHQ932_0420MT	2800	6000	48	29.8	1194.5
					PHQ932_0420MTC	4500			35.4	1181.8
					PHQ932_0420MTL	2800			57.8	1194.5
				≤1	PHQA932_0420MF	2800		48	36.2	1181.8
					PHQA932_0420MFC	4500			6000	
48.00	3000	4500	9000	≤3	PH932_0480MT	2800	4500	48	28.5	1084.2
					PH932_0480MTC	4000			34.2	1076.2
					PH932_0480MTL	2800			56.5	1084.2
				≤1	PHA932_0480MF	2800		48	34.9	1076.2
					PHA932_0480MFC	4000				
60.00	3000	4500	9000	≤3	PH932_0600MT	2800	4500	48	26.7	1060.4
					PH932_0600MTC	4000			32.3	1055.5
					PH932_0600MTL	2800			54.7	1060.4
				≤1	PHA932_0600MF	2800		48	33.6	1055.5
					PHA932_0600MFC	4000				
	3800	6000	12000	≤3	PHQ932_0600MT	2800	6000	48	27.1	1149.3
					PHQ932_0600MTC	5500			32.7	1143.5
					PHQ932_0600MTL	2800			55.1	1149.3
				≤1	PHQA932_0600MF	2800		48	33.5	1143.5
					PHQA932_0600MFC	5500			6000	

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued next page)

61.00	2500	4250	9000	≤3	PHV933_0610MT	2500	4500	38	12.1	850.2			
					PHV933_0610MTC	3200			20.6	845.4			
					PHV933_0610MTL	2500			48	30.0	850.2		
					PHV933_0610MTLC	3200				22.7	847.6		
				≤1	PHVA933_0610MF	2500		38	17.6	845.4			
					PHVA933_0610MFC	3200			20.6				
					PHVA933_0610MFL	2500		48	36.4	847.6			
					PHVA933_0610MFLC	3200							
72.00	3800	6000	12000	≤3	PHQ933_0720MT	2200	4500	38	13.0	1205.3			
					PHQ933_0720MTC	3300			5000	21.5	1198.3		
					10138	48			PHQ933_0720MTL	2200	4500	30.9	1205.3
					10138				PHQ933_0720MTLC	3300	5000	23.6	1201.5
			12000	≤1	PHQA933_0720MF	2200		4500	38	18.5	1198.3		
					PHQA933_0720MFC	3300		5000					
					PHQA933_0720MFL	2200		4500	48	37.3	1201.5		
					PHQA933_0720MFLC	3300		5000					
91.00	2500	4250	9000	≤3	PHV933_0910MT	2500	4500	38	8.9	838.4			
					PHV933_0910MTC	3200			17.0	835.8			
					PHV933_0910MTL	2500			48	27.2	838.4		
					PHV933_0910MTLC	3200				17.3	837.1		
				≤1	PHVA933_0910MF	2500		38	14.0	835.8			
					PHVA933_0910MFC	3200			17.0				
					PHVA933_0910MFL	2500		48	33.1	837.1			
					PHVA933_0910MFLC	3200							
96.00	3800	6000	12000	≤3	PHQ933_0960MT	2500	4500	38	11.2	1207.1			
					PHQ933_0960MTC	3400			6000	19.7	1203.2		
					PHQ933_0960MTL	2500			4500	48	29.1	1207.1	
					PHQ933_0960MTLC	3400			6000		21.8	1205.0	
				≤1	PHQA933_0960MF	2500		4500	38	16.7	1203.2		
					PHQA933_0960MFC	3400		6000					
					PHQA933_0960MFL	2500		4500	48	35.5	1205.0		
					PHQA933_0960MFLC	3400		6000					

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

Selection Data



Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

PH9 (continued next page)

120.0	3800	6000	12000	≤3	PHQ933_1200MT	2500	4500	38	10.8	1202.6	
					PHQ933_1200MTC	3600	6000		19.3	1200.1	
					PHQ933_1200MTL	2500	4500		48	28.7	1202.6
					PHQ933_1200MTLC	3600	6000			21.4	1201.2
				≤1	PHQA933_1200MF	2500	4500	38	16.3	1200.1	
					PHQA933_1200MFC	3600	6000				
					PHQA933_1200MFL	2500	4500		48	35.1	1201.2
					PHQA933_1200MFLC	3600	6000				
121.0	2500	4250	9000	≤3	PHV933_1210MT	2500	4500	38	7.8	805.0	
					PHV933_1210MTC	3200			16.0	803.6	
					PHV933_1210MTL	2500			48	26.1	805.0
					PHV933_1210MTLC	3200				16.3	804.3
				≤1	PHVA933_1210MF	2500		38	13.0	803.6	
					PHVA933_1210MFC	3200			16.0		
					PHVA933_1210MFL	2500			48	32.1	804.3
					PHVA933_1210MFLC	3200					
150.0	3800	6000	12000	≤3	PHQ933_1500MT	3000	5500	38	9.1	1201.9	
					PHQ933_1500MTC	4000	6000		17.6	1200.3	
					PHQ933_1500MTL	3000	5500		48	27.0	1201.9
					PHQ933_1500MTLC	4000	6000			19.7	1201.0
				≤1	PHQA933_1500MF	3000	5500	38	14.6	1200.3	
					PHQA933_1500MFC	4000	6000				
					PHQA933_1500MFL	3000	5500		48	33.4	1201.0
					PHQA933_1500MFLC	4000	6000				
168.0	3800	6000	12000	≤3	PHQ933_1680MT	3300	6000	38	8.0	1203.5	
					PHQ933_1680MTC	4500			16.1	1201.9	
					PHQ933_1680MTL	3300			48	26.3	1203.5
					PHQ933_1680MTLC	4500				16.4	1202.7
				≤1	PHQA933_1680MF	3300		38	13.1	1201.9	
					PHQA933_1680MFC	4500					
					PHQA933_1680MFL	3300			48	32.2	1202.7
					PHQA933_1680MFLC	4500					

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued next page)

210.0	3800	6000	12000	≤3	PHQ933_2100MT	3300	6000	38	7.8	1200.3	
					PHQ933_2100MTC	4500			15.9	1199.3	
					PHQ933_2100MTL	3300			48	26.1	1200.3
					PHQ933_2100MTLC	4500				16.3	1199.8
				≤1	PHQA933_2100MF	3300		38	12.9	1199.3	
					PHQA933_2100MFC	4500			48	32.1	1199.8
					PHQA933_2100MFL	3300					
					PHQA933_2100MFLC	4500					
240.0	3800	6000	12000	≤3	PHQ933_2400MT	3300	6000	38	7.2	1197.5	
					PHQ933_2400MTC	5000			15.3	1196.8	
					PHQ933_2400MTL	3300			48	25.5	1197.5
					PHQ933_2400MTLC	5000				15.7	1197.1
				≤1	PHQA933_2400MF	3300		38	12.3	1196.8	
					PHQA933_2400MFC	5000			48	31.5	1197.1
					PHQA933_2400MFL	3300					
					PHQA933_2400MFLC	5000					
300.0	3800	6000	12000	≤3	PHQ933_3000MT	3300	6000	38	7.2	1196.5	
					PHQ933_3000MTC	5000			15.3	1196.0	
					PHQ933_3000MTL	3300			48	25.5	1196.5
					PHQ933_3000MTLC	5000				15.6	1196.2
				≤1	PHQA933_3000MF	3300		38	12.3	1196.0	
					PHQA933_3000MFC	5000			48	31.4	1196.2
					PHQA933_3000MFL	3300					
					PHQA933_3000MFLC	5000					

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued from previous page)

420.0	3800	6000	12000	≤3	PHQ933_4200MT	3300	6000	38	7.1	1184.0
					PHQ933_4200MTC	5000			15.2	1183.8
					PHQ933_4200MTL	3300		48	25.4	1184.0
					PHQ933_4200MTLC	5000			15.6	1183.9
				≤1	PHQA933_4200MF	3300		38	12.2	1183.8
					PHQA933_4200MFC	5000			48	31.4
					PHQA933_4200MFL	3300		48		31.4
					PHQA933_4200MFLC	5000				
600.0	3800	6000	12000	≤3	PHQ933_6000MT	3300	6000	38	7.1	1144.6
					PHQ933_6000MTC	5000			15.2	1144.4
					PHQ933_6000MTL	3300		48	25.4	1144.6
					PHQ933_6000MTLC	5000			15.5	1144.5
				≤1	PHQA933_6000MF	3300		38	12.2	1144.4
					PHQA933_6000MFC	5000			48	31.4
					PHQA933_6000MFL	3300				
					PHQA933_6000MFLC	5000				

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH10 (continued next page)

18.00	4608	6912	10115	≤3	PH1032_0180MT	1800	3000	48	72.0	1778.3
					PH1032_0180MTC	2500			77.2	1655.5
					PH1032_0180MTL	1800		60	99.6	1778.3
					PH1032_0180MTC	2500				
24.00	4608	7500	13434	≤3	PH1032_0240MT	2200	3500	48	43.2	1752.8
					PH1032_0240MTC	2700			48.4	1683.5
					PH1032_0240MTL	2200		60	70.8	1752.8
					PH1032_0240MTC	2700				1733.2
	6500	10000	20000		PHQ1032_0240MT	2000	3000	48	100.4	2090.1
					PHQ1032_0240MTC	3000			4500	95.8
30.00	5000	7500	15000	≤3	PH1032_0300MT	2500	4000	48	35.7	1730.1
					PH1032_0300MTC	3200			41.3	1686.3
					PH1032_0300MTL	2500		60	63.8	1730.1
					PH1032_0300MTC	3200				1717.9
	6500	10000	20000		PHQ1032_0300MT	2200	3500	48	81.8	2075.9
					PHQ1032_0300MTC	3500			5000	77.2
42.00	5000	7500	15000	≤3	PH1032_0420MT	2800	4500	48	30.2	1690.9
					PH1032_0420MTC	4000			35.8	1665.6
					PH1032_0420MTL	2800		60	58.2	1690.9
	PHQ1032_0420MT	2500	48	67.1	2048.8					
	PHQ1032_0420MTC	4000			5000	62.5	2040.1			
48.00	4608	6912	13824	≤3	PH1032_0480MT	2800	4500	48	29.0	1656.8
					PH1032_0480MTC	4000			34.6	1638.1
					PH1032_0480MTL	2800		60	57.0	1656.8
60.00	4032	6912	13824	≤3	PH1032_0600MT	2800	4500	48	27.0	1601.8
					PH1032_0600MTC	4000			32.6	1590.6
					PH1032_0600MTL	2800		60	55.0	1601.8
	PHQ1032_0600MT	2500	48	59.8	1974.5					
	PHQ1032_0600MTC	4000			5000	55.2	1970.5			
61.00	4000	7500	15000	≤3	PHV1033_0610MT	2500	4500	48	31.7	1370.3
					PHV1033_0610MTC	3000			36.9	1363.6

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH10 (continued from previous page)

91.00	4000	7500	15000	≤3	PHV1033_0910MT	2500	4500	60	28.3	1342.1
					PHV1033_0910MTC	3000			34.0	1338.7
96.00	6500	10000	20000	≤3	PHQ1033_0960MT	2200	3500	48	43.7	2068.2
					PHQ1033_0960MTC	3200			5000	48.9
					PHQ1033_0960MTL	2200	3500	60	71.3	2068.2
					PHQ1033_0960MTLC	3200				5000
120.0	6500	10000	20000	≤3	PHQ1033_1200MT	2200	3500	48	42.6	2062.0
					PHQ1033_1200MTC	3200			5000	47.7
					PHQ1033_1200MTL	2200	3500	60	70.1	2062.0
					PHQ1033_1200MTLC	3200				5000
150.0	6500	10000	20000	≤3	PHQ1033_1500MT	2500	4000	48	35.2	2060.8
					PHQ1033_1500MTC	3750			6000	40.8
					PHQ1033_1500MTL	2500	4000	60	63.2	2060.8
					PHQ1033_1500MTLC	3750				6000
168.0	6500	10000	20000	≤3	PHQ1033_1680MT	2800	4500	48	30.2	2064.0
					PHQ1033_1680MTC	4000			5000	35.8
					PHQ1033_1680MTL	2800	4500	55	58.2	2064.0
210.0	6500	10000	20000	≤3	PHQ1033_2100MT	2800	4500	48	29.8	2059.3
					PHQ1033_2100MTC	4000			6000	35.4
					PHQ1033_2100MTL	2800	4500	55	57.8	2059.3
240.0	6500	10000	20000	≤3	PHQ1033_2400MT	2800	4500	48	27.3	2055.3
					PHQ1033_2400MTC	4500			6000	32.9
					PHQ1033_2400MTL	2800	4500	55	55.3	2055.3
300.0	6500	10000	20000	≤3	PHQ1033_3000MT	2800	4500	48	27.1	2054.2
					PHQ1033_3000MTC	4500			6000	32.7
					PHQ1033_3000MTL	2800	4500	55	55.1	2054.2
420.0	6500	10000	20000	≤3	PHQ1033_4200MT	2800	4500	48	26.9	2036.4
					PHQ1033_4200MTC	4500			6000	32.6
					PHQ1033_4200MTL	2800	4500	55	54.9	2036.4
600.0	6500	10000	20000	≤3	PHQ1033_6000MT	2800	4500	48	26.9	1968.8
					PHQ1033_6000MTC	4500			6000	32.5
					PHQ1033_6000MTL	2800	4500	55	54.9	1968.8

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 52 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

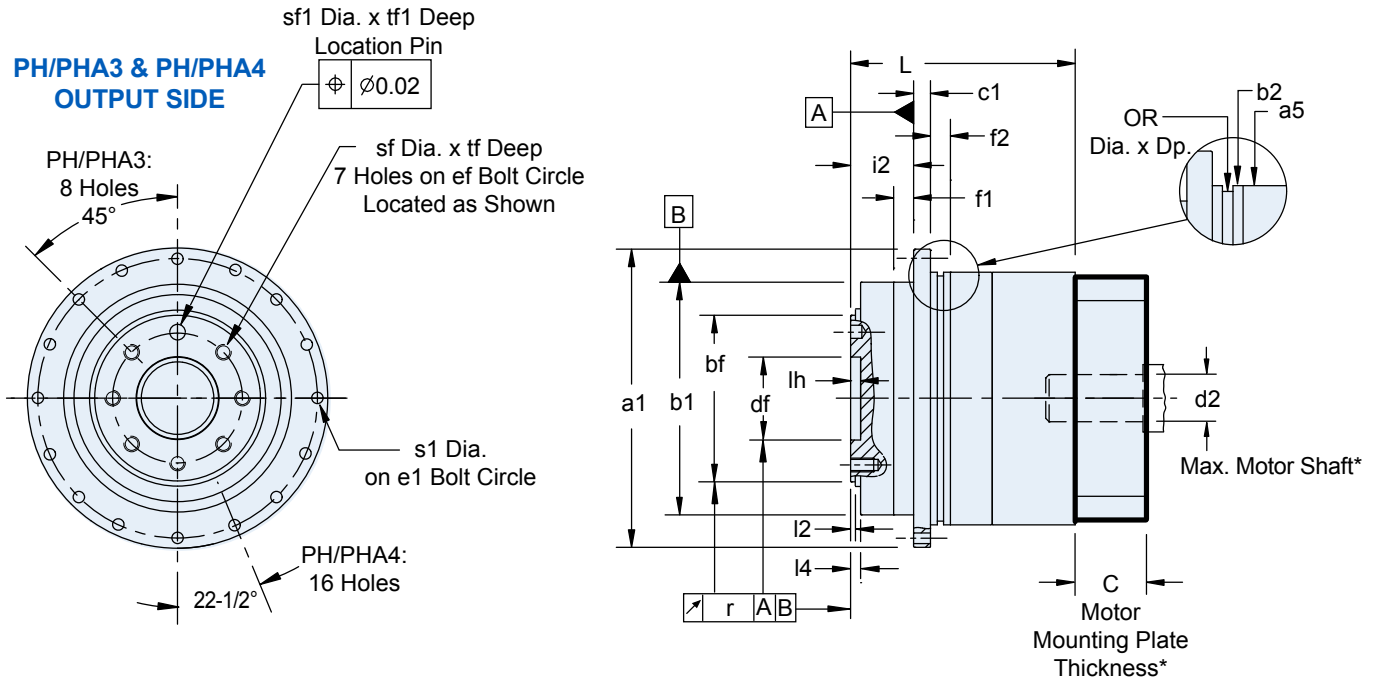
⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

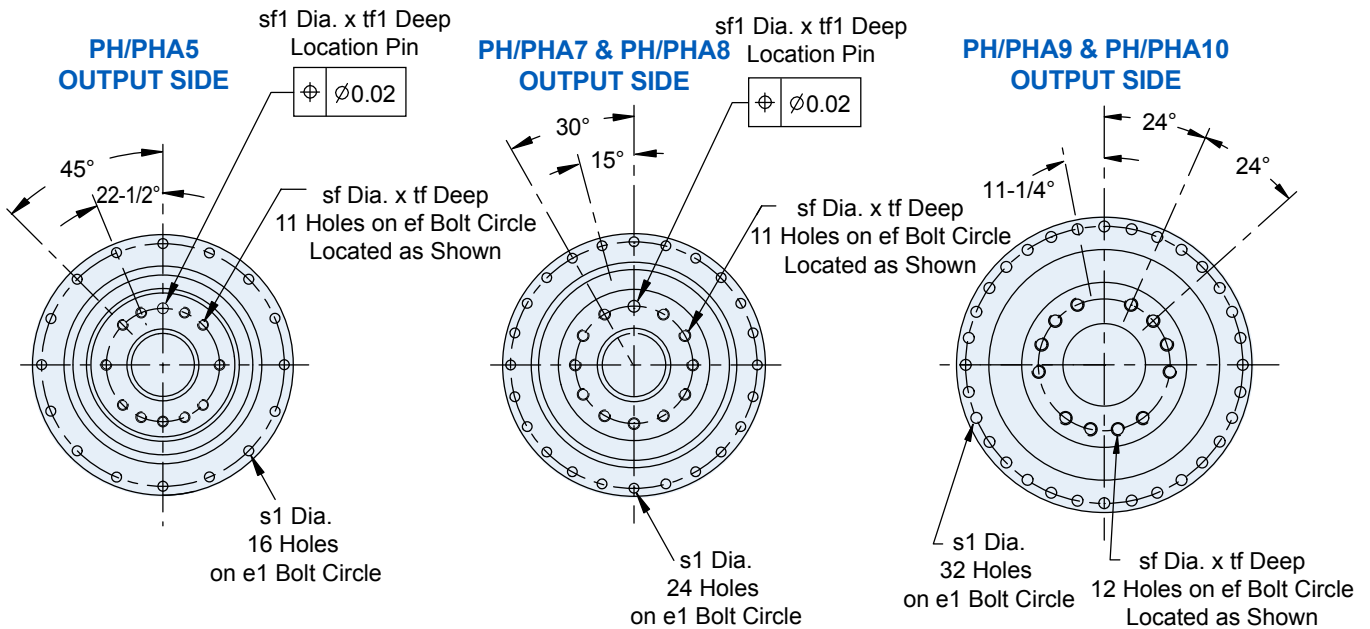
** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE — Flange Output

PH/PHA Standard Input PH/PHA ServoCool Input Option



* See Motor Mounting Plate Option, page 50 for details.





Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	h7*	b1	h7*	b2	h7*	bf	h7*	c1	df	H6*	e1	ef
PH/PHA3	86	+0.000/-0.035	64	+0.000/-0.030	70 ⁽¹⁾	+0.000/-0.030	40	+0.000/-0.025	4	20	+0.013/-0.000	79	31.5
PH/PHA4	118	+0.000/-0.035	90	+0.000/-0.035	95	+0.000/-0.035	63	+0.000/-0.030	7	31.5	+0.016/-0.000	109	50
PH/PHA5	145	+0.000/-0.040	110	+0.000/-0.035	120 ⁽¹⁾	+0.000/-0.035	80	+0.000/-0.030	8	40	+0.016/-0.000	135	63
PH/PHA7	179	+0.000/-0.040	140	+0.000/-0.040	152	+0.000/-0.040	100	+0.000/-0.035	10	50	+0.016/-0.000	168	80
PH/PHA8	247	+0.000/-0.046	200	+0.000/-0.046	212	+0.000/-0.046	160	+0.000/-0.040	12	80	+0.019/-0.000	233	125
PH/PHA9	300	–	255	+0.000/-0.052	255	+0.000/-0.052	180	+0.000/-0.040	18	90	+0.022/-0.000	280	140
PH/PHV10	330	–	285	+0.000/-0.057	285	+0.000/-0.052	200	+0.000/-0.046	20	95	+0.022/-0.000	310	160

⁽¹⁾ Not applicable for PH322 and PH522.

Table 2 Dimensions (mm)

Unit	f1	f2	i2	l2	l4	lh	OR	r	s1	sf	sf1	H7*	tf	tf1
PH/PHA3	7	8	19.5	3	3.5	4	65x2	0.020	4.5	M5x0.80	M5x0.80	+0.012/-0.000	7	3
PH/PHA4	10	10	30	6	6.5	6	90x3	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7
PH/PHA5	10	12	29	6	6.5	6	110x3	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7
PH/PHA7	12	12	38	6	6.5	6	145x3	0.025	6.6	M8x1.25	M8x1.25	+0.015/-0.000	14	7
PH/PHA8	15	15	50	8	8.5	8	200x5	0.030	9	M10x1.50	M10x1.50	+0.015/-0.000	18	10
PH/PHA9	20	33	66	11	12	12	238x5	0.030	13.5	M16x2.00	–	–	24	–
PH/PHV10	20	20	75	15	15	10	270x6	0.040	13.5	M20x 2.25	–	–	30	–

* h7 = existing values; H7 = permissible values

Table 3 Dimensions (mm)

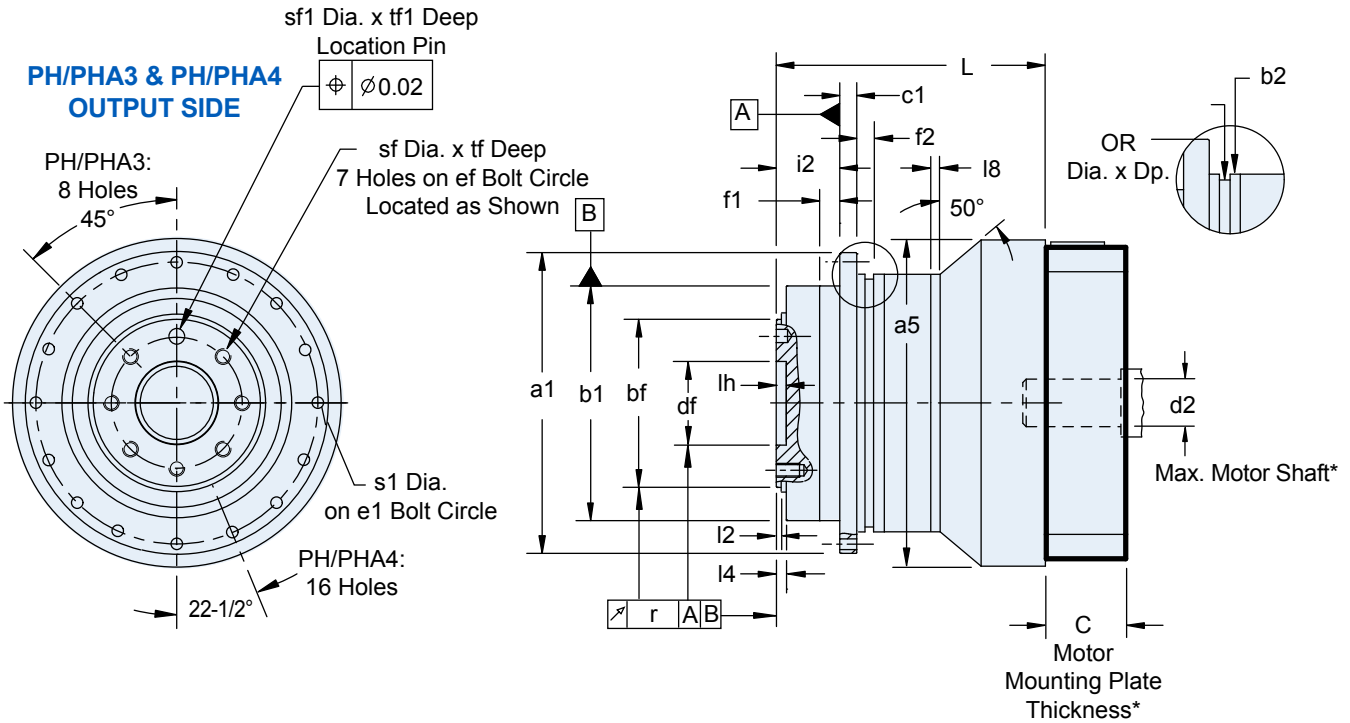
Unit	Standard Input			ServoCool Input Option*							
	a5	L	Unit	a5	L	Unit	a5	L	Unit	a5	L
PH321	70	80.5	PHA321	70	80.5	–	–	–	–	–	–
PH322	55	104	PHA322	55	108	–	–	–	–	–	–
PH421	95	99	PHA421	95	99	PH421_C	95	122.5	PHA421_C	95	99
PH422	72	146.5	PHA422	72	146.5	–	–	–	–	–	–
PH521	120	110	PHA521	120	110	PH521_C	120	138	PHA21_C	120	110
PH522	98	159.5	PHA522	98	159.5	PH522_C	98	183	PHA22_C	98	183
PH721	152	138	PHA721	152	140	PH721_C	152	168	PHA721_C	152	138
PH722	115	190	PHA722	115	190	PH722_C	115	218	PHA722_C	115	218
PH821	212	183	PHA821	212	184.5	PH821_C	212	231	PHA821_C	212	183
PH822	145	251	PHA822	145	253	PH822_C	145	281	PHA822_C	145	251
PH932	190	349.5	PHA932	190	350.5	PH932_C	190	397.5	PHA932_C	190	349.5
PHV933	152	269.5	PHAV933	152	271.5	PHV933_C	152	299.5	PHAV933_C	152	269.5
PH1032	190	366	–	–	–	PH1032_C	190	414	–	–	–
PHV1033	212	307	–	–	–	PHV1033_C	212	355	–	–	–

* See "PH/PHA Large Input Option" on page 88 for ServoCool Input Option combined with Large Input Option

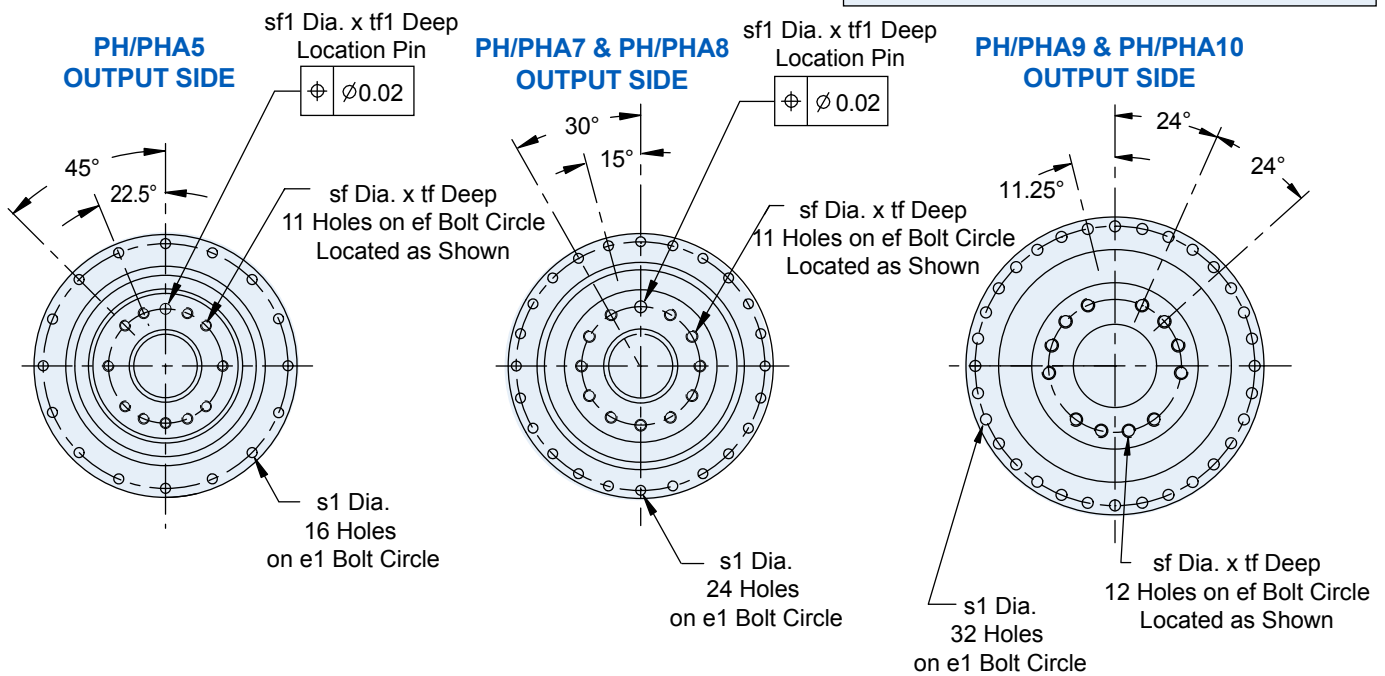
PH Series (A, Q, QA): INLINE — Flange Output

PH Series (A, Q, QA): INLINE — Flange Output

PH/PHA Large Input Option



* See Motor Mounting Plate Option, page 50 for details.





Dimensional Data

PH Series (A, Q, QA): INLINE — Flange Output

Table 1 Dimensions (mm)

Unit	a1	h7*	b1	h7*	b2	h7*	bf	h7*	c1	df	H7*	e1	ef
PH/PHA3	86	+0.000/-0.035	64	+0.000/-0.030	70 ⁽¹⁾	+0.000/-0.030	40	+0.000/-0.025	4	20	+0.021/-0.0	79	31.5
PH/PHA4	118	+0.000/-0.035	90	+0.000/-0.035	95	+0.000/-0.035	63	+0.000/-0.030	7	31.5	+0.025/-0.0	109	50
PH/PHA5	145	+0.000/-0.040	110	+0.000/-0.035	120 ⁽¹⁾	+0.000/-0.035	80	+0.000/-0.030	8	40	+0.025/-0.0	135	63
PH/PHA7	179	+0.000/-0.040	140	+0.000/-0.040	152	+0.000/-0.040	100	+0.000/-0.035	10	50	+0.025/-0.0	168	80
PH/PHA8	247	+0.000/-0.046	200	+0.000/-0.046	212	+0.000/-0.046	160	+0.000/-0.040	12	80	+0.030/-0.0	233	125
PH/PHA9	300	—	255	+0.000/-0.052	255	+0.000/-0.052	180	+0.000/-0.040	18	90	+0.035/-0.0	280	140
PH10	330	—	285	+0.000/-0.057	285	+0.000/-0.052	200	+0.000/-0.046	20	95	+0.035/-0.0	310	160

⁽¹⁾ Not applicable for PH322 and PH522.

Table 2 Dimensions (mm)

Unit	f1	f2	i2	l2	l4	l8	lh	OR	r	s1	sf	sf1	H7*	tf	tf1
PH/PHA3	7	8	19.5	3	3.5	5	4	65x2	0.020	4.5	M5x0.80	M5x0.80	+0.012/-0.000	7	3
PH/PHA4	10	10	30	6	6.5	5	6	90x3	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7
PH/PHA5	10	12	29	6	6.5	5	6	110x3	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7
PH/PHA7	12	12	38	6	6.5	5	6	145x3	0.025	6.6	M8x1.25	M8x1.25	+0.015/-0.000	14	7
PH/PHA8	15	15	50	8	8.5	5	8	200x5	0.030	9	M10x1.50	M10x1.50	+0.015/-0.000	18	11
PH/PHA9	20	33	66	11	12	5	12	238x5	0.030	13.5	M16x2.00	—	—	24	—
PH10	20	20	75	15	15	3	10	270x6	0.040	13.5	M20x 2.25	—	—	30	—

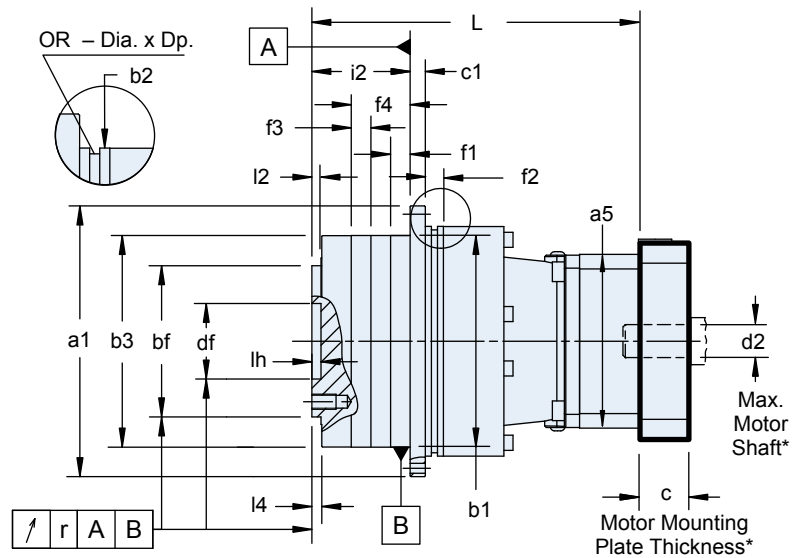
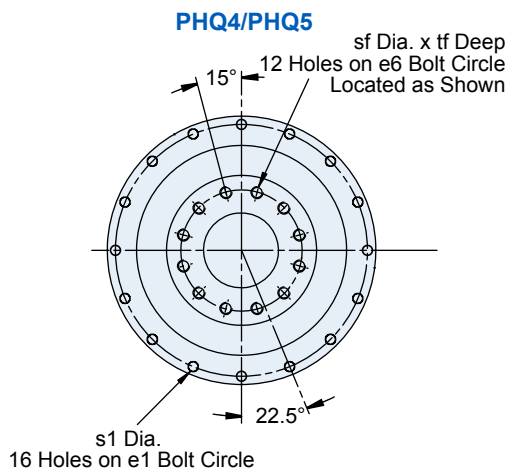
* h7 = existing values; H7 = permissible values

Table 3 Dimensions (mm)

Large Input Option						Large Input with ServoCool Option					
Unit	a5	L	Unit	a5	L	Unit	a5	L	Unit	a5	L
PH321_L	88	87.8	PHA321_L	88	85.5	PH321_LC	88	111.3	PHA321_LC	88	87.8
PH322_L	75	120.5	—	—	—	—	—	—	—	—	—
PH421_L	114	107.5	PHA421_L	114	107.5	PH421_LC	114	135.5	PHA421_LC	114	107.5
PH422_L	100	149.8	PHA422_L	100	147.5	PH422_LC	100	173.3	PHA422_LC	100	149.8
PH521_L	124	124	PHAS21_L	124	126	PH521_LC	124	154	PHAS21_LC	124	124
PH522_L	168	168	PHAS22_L	168	168	PH522_LC	168	196	PHAS22_LC	168	168
PH721_L	208	154.5	PHA721_L	208	156	PH721_LC	208	202.5	PHA721_LC	208	154.5
PH722_L	204	204	PHA722_L	204	206	PH722_LC	204	234	PHA722_LC	204	204
PH821_L	225	191	—	—	—	—	—	—	—	—	—
PH822_L	268	268	PHA822_L	268	269	PH822_LC	268	316	PHA822_LC	268	268
PH932_L	358	357.5	—	—	—	PH932_LC	358	357.5	—	—	—
PHV933_L	208	286	PHAV933_L	208	287.5	PHV933_LC	208	334	PHAV933_LC	208	286
PH1032_L	374	374	—	—	—	PH1032_LC	374	374	—	—	—
PHV1033_L	225	315	—	—	—	—	—	—	—	—	—

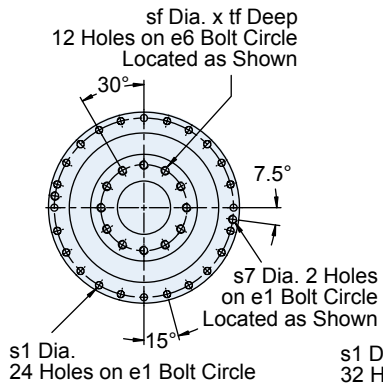
PH Series (A, Q, QA): INLINE — Flange Output

PHQ/PHQA Standard Input

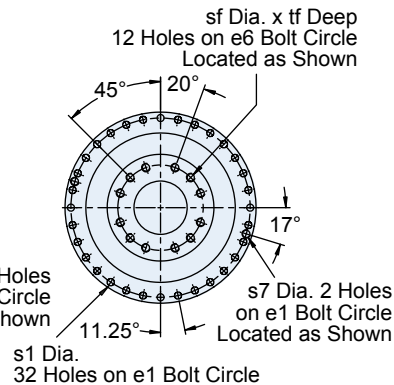


OUTPUT SIDE

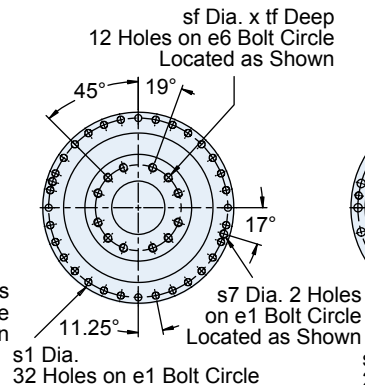
PHQ7/PHQ8



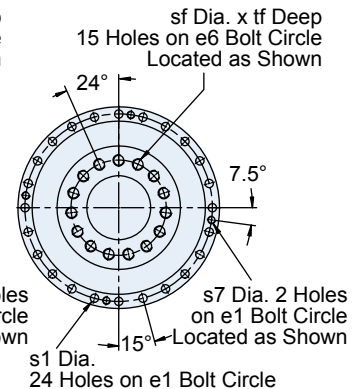
PHQ9



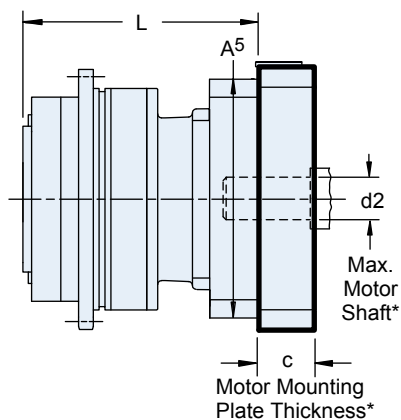
PHQ10



PHQ11



PHQ/PHQA Large Input Option



* See Motor Mounting Plate Option, see page 50 for details.



Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	b1	b2 _{h7}	b3 _{g6}	bf _{h7}	c1	df	e1	e6	f1	f2	f3	f4
PHQ/PHQA4	118 _{h7}	90 _{h7}	95	–	63	7	31.5	109	50	10	10	–	–
PHQ/PHQA5	145 _{h7}	110 _{h7}	120	–	80	8	40	135	63	10	12	–	–
PHQ/PHQA7	179 _{h7}	140 _{h7}	152	–	100	10	50	168	80	12	12	–	–
PHQ/PHQA8	247 _{h7}	200 _{h7}	212	–	160	12	80	233	125	15	15	–	–
PHQ/PHQA9	300 _{h7}	255 _{h7}	255	–	180	18	90	280	145	20	33	–	–
PHQ10	330 _{h7}	285 _{h7}	285	–	200	20	95	310	166	20	20	–	–
PHQ11	425	365 _{h6}	–	365	260	32	120	395	200	30	30	30	120

Table 2 Dimensions (mm)

Unit	i2	l2	l4	lh	OR	r	s1	s7	sf	tf
PHQ/PHQA4	30	6	6.5	6	90x3	0.020	5.5	–	M6x1.00	11
PHQ/PHQA5	29	6	6.5	6	110x5	0.020	5.5	–	M8x1.25	12
PHQ/PHQA7	38	6	6.5	6	145x3	0.025	6.6	–	M10x1.50	16
PHQ/PHQA8	50	8	8.5	8	200x5	0.030	9.0	M10x1.50	M12x1.75	17
PHQ/PHQA9	66	11	12	12	238x5	0.030	13.5	M8x1.25	M20x 2.25	28
PHQ10	75	15	15	10	270x6	0.040	13.5	M10x1.50	M24x2.50	35
PHQ11	190	10	10	10	–	0.040	17.5	M16x2.00	M24x2.50	36

* h6, h7, g6 = existing values

Table 3 Dimensions (mm)

Standard Input						Large Input Option					
Unit	a5	L	Unit	a5	L	Unit	a5	L	Unit	a5	L
PHQ421	95	99	PHQA421	95	99	PHQ421_L	95	107.5	PHQA421_L	95	107.5
PHQ422	100	146.5	PHQA422	100	146.5	PHQ422_L	100	149.8	PHQA422_L	100	147.5
PHQ521	145	110	PHQA521	145	110	PHQ521_L	145	124	PHQA521_L	145	126
PHQ522	115	159.5	PHQA522	115	159.5	PHQ522_L	115	168	PHQA522_L	115	168
PHQ721	152	138	PHQA721	152	140	PHQ721_L	152	154.5	PHQA721_L	152	156
PHQ722	115	190	PHQA722	115	190	PHQ722_L	115	204	PHQA722_L	115	206
PHQ723	100	239.5	PHQA723	100	239.5	PHQ723_L	100	248	PHQA723_L	100	248
PHQ822	145	251	PHQA822	145	253	PHQ822_L	145	268	PHQA822_L	145	269
PHQ823	115	303	PHQA823	115	303	PHQ823_L	115	317	PHQA823_L	115	319
PHQ932	190	349.5	PHQA932	190	350.5	PHQ932_L	190	357.5	–	–	–
PHQ933	145	417	PHQA933	145	419	PHQ933_L	145	434	PHQA933_L	145	435
PHQ1032	225	415	–	–	–	–	–	–	–	–	–
PHQ1033	190	503	–	–	–	PHQ1033_L	190	511	–	–	–
PHQ1132	310	430	–	–	–	–	–	–	–	–	–
PHQ1133	190	553.5	–	–	–	PHQ1133_L	190	561.5	–	–	–

PH Series (A, Q, QA): INLINE – Flange Output