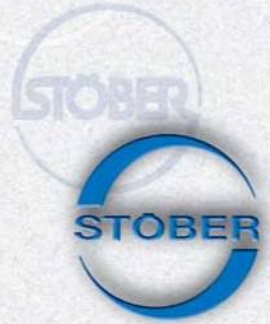




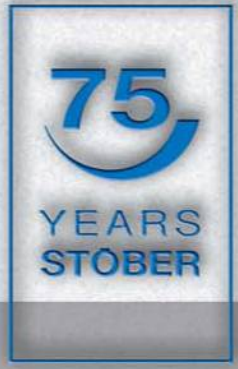
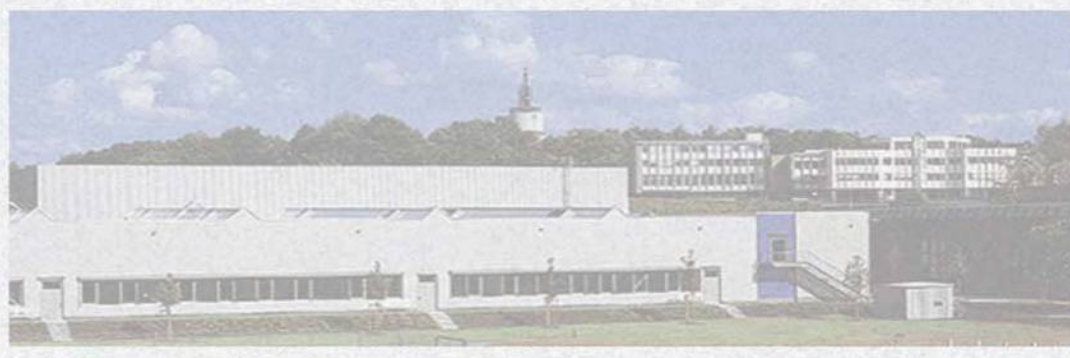
STÖBER

ServoFit




















STÖBER



since 1934

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ServoFit® Gearheads



P Series

- Backlash — ≤ 3 arc/mins
- Ratios — 3:1 to 100:1
- Input RPM — up to 8,000
- Noise Level — as low as 61 dB(A)**
- Output Torque up to 17,700 in.lbs.
- Available:
 - Washdown Food Duty



PA Series

- Backlash — ≤ 1 arc/mins
- Ratios — 3:1 to 100:1
- Input RPM — up to 8,000
- Noise Level — as low as 61 dB(A)**
- Output Torque up to 8,850 in.lbs.
- Available:
 - Washdown Food Duty

PKX Series

- Backlash — ≤ 4 arc/mins
- Ratios — 3:1 to 300:1
- Input RPM — up to 6,000
- Noise Level — as low as 70 dB(A)**
- Output Torque up to 17,700 in.lbs.
- Available:
 - Washdown Food Duty



PK Series

- Backlash — ≤ 3.5 arc/mins
- Ratios — 12:1 to 561:1
- Input RPM — up to 6,000
- Noise Level — as low as 63 dB(A)**
- Output Torque up to 17,700 in.lbs.
- Available:
 - Washdown Food Duty



PH Series

- Backlash — ≤ 3 arc/mins
- Ratios — 4:1 to 121.0:1
- Input RPM — up to 8,000
- Noise Level — as low as 61 dB(A)**
- Output Torque up to 44,290 in.lbs.



PHA Series

- Backlash — ≤ 1 arc/mins
- Ratios — 4:1 to 121.0:1
- Input RPM — up to 8,000
- Noise Level — as low as 61 dB(A)**
- Output Torque up to 44,290 in.lbs.

PHQ Series

- Backlash — ≤ 3 arc/mins
- Ratios — 18:1 to 600:1
- Input RPM — up to 7,000
- Noise Level — as low as 62 dB(A)**
- Output Torque up to 57,570 in.lbs.



PHQA Series

- Backlash — ≤ 1 arc/mins
- Ratios — 18:1 to 600:1
- Input RPM — up to 7,000
- Noise Level — as low as 62 dB(A)**
- Output Torque up to 57,570 in.lbs.

PHKX Series

- Backlash — ≤ 3.5 arc/mins
- Ratios — 4:1 to 300:1
- Input RPM — up to 6,000
- Noise Level — as low as 70 dB(A)**
- Output Torque up to 66,430 in.lbs.



PHK Series

- Backlash — ≤ 3.5 arc/mins
- Ratios — 16:1 to 561:1
- Input RPM — up to 6,000
- Noise Level — as low as 63 dB(A)**
- Output Torque up to 11,000 in.lbs.



KS Series

- Backlash — ≤ 4 arc/mins
- Ratios — 6:1 to 200:1
- Input RPM — up to 6,000
- Noise Level — as low as 62 dB(A)**
- Output Torque up to 2,210 in.lbs.



PE Series

- Backlash — ≤ 15 arc/mins
- Ratios — 5:1 to 100:1
- Input RPM — up to 8,000
- Noise Level — as low as 60 dB(A)**
- Output Torque up to 1,060 in.lbs.



C Series

- Backlash — ≤ 20 arc/mins
- Ratios — 2:1 to 276:1*
- Input RPM — up to 4,500
- Noise Level — as low as 53 dB(A)**
- Output Torque up to 62,000 in.lbs.
- Available:
 - Inch or Metric Output
 - Beverage and Food Duty



F Series

- Backlash:
 - Standard ≤ 11 arc/mins
 - Reduced ≤ 7 arc/mins
- Ratios — 4:1 to 540:1*
- Input RPM — up to 4,500
- Noise Level — as low as 53 dB(A)**
- Output Torque up to 9,700 in.lbs.
- Available:
 - Inch or Metric Output
 - Solid, Hollow, Single and Double Bushing
 - Beverage and Food Duty



K Series

- Backlash:
 - Standard ≤ 12 arc/mins
 - Reduced ≤ 6 arc/mins
- Ratios — 4:1 to 381:1*
- Input RPM — up to 4,500
- Noise Level — as low as 53 dB(A)**
- Output Torque up to 106,000 in.lbs.
- Available:
 - Inch or Metric Output
 - Solid, Hollow, Single and Double Bushing
 - Beverage and Food Duty



* Ratios standard in one housing. Higher ratios available in compound units.
 ** dB(A) rating measured at 1 meter distance with 3000 RPM input.



ServoFit® Gearheads

The STOBER offering of ServoFit™ gearheads will enable you to fit all your servo needs. The ServoFit™ Precision Planetary Gearheads are for compact, highly dynamic applications. The ServoFit™ Modular System was designed for those applications where the compact size of a planetary gearhead is not needed. With these two lines, STOBER Drives offers the world's largest variety of servo gearheads.

The STOBER difference = VALUE for you!



Fits Any Servo Motor

Motor plates will fit a wide selection of NEMA, IEC, or custom servo motors.

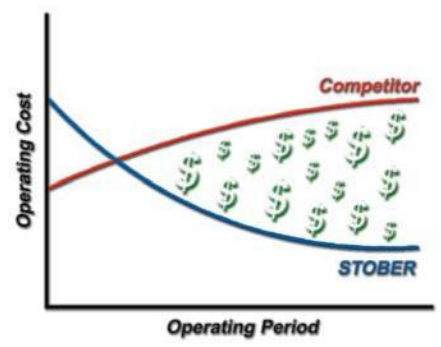
5 YEAR LIMITED WARRANTY

Full warranty on all reducer components: gears, covers, material and workmanship, etc. Normal wear items (oil seals, bearings, etc.) are covered for 2 years.

STANDARD 3-DAY DELIVERY

Most sizes are available with STANDARD 3 DAY DELIVERY. (Does not apply to PA and PHA.) Custom motor plates — 10 days maximum.

3 Rings
To get competent, "one-stop" shopping!



SAME DAY EMERGENCY SHIPPING

24 Hours – No expedite fee
Daytime Phone: 606 759-5090
On-Call Emergency: 606 563-6035

1 Hour QUOTE

Helical Gears

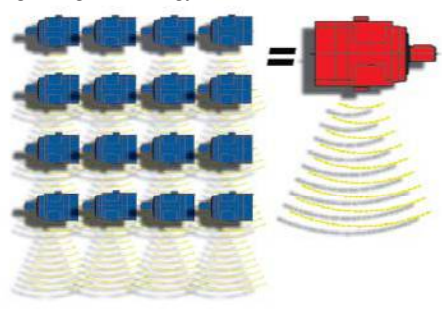
- Highest torque capacity
- Maximum efficiency
- Maintains low noise level



Exceptional Performance

- Low noise level
- Cool running
- High speed capacity
- High torque capacity
- Low backlash

1 conventional planetary gearhead produces the same noise level as 16 STOBER planetary gearheads with HeliCamber™ gearing technology.



High Quality Lubricant

- Wide temperature range
- Enhanced oxidation stability
- Optimum corrosion protection
- Superior wear protection



ServoFit® Gearheads Beverage and Food Duty



Beverage and Food Duty

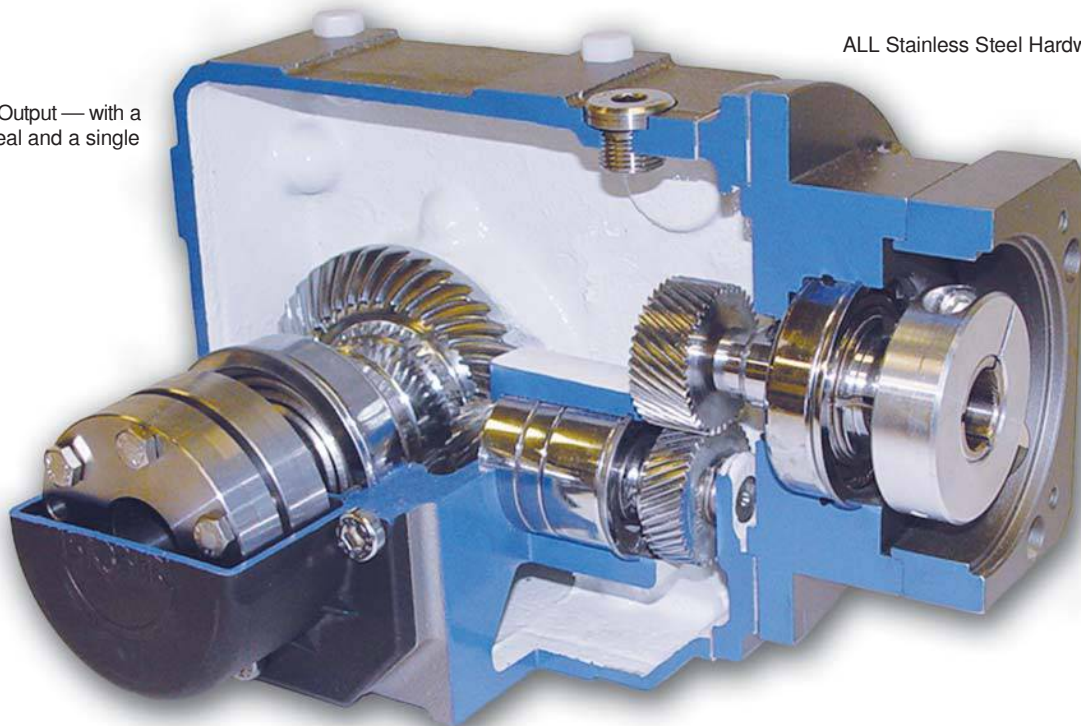
- Lubricated for Life — Double Output Seals (where possible)
- Maintenance Free — No Breather
- Stainless Output Bushing, Shaft, or Bore
 - Output Covers Included with Double Bushings
 - Output Covers Optional with Single Bushing and Quills
- Multilayer Industrial 316 Stainless Steel Epoxy Coating
- 5 Year Warranty

Standard Coating:

- BEVERAGE 1-Primer
2-Industrial 316 Stainless Steel Epoxy
- FOOD 1-Primer
2-Industrial 316 Stainless Steel Epoxy
1-Silver Bullet Anti-Microbial™ Epoxy
- Options Layer of Ultra Clear Industrial Epoxy
White Epoxy



Double Sealed Output — with a dual lip outer seal and a single lip inner seal



ALL Stainless Steel Hardware

Outside Closed Cover Cap — protects seals from high pressure washing

Inside Split Cover Cap — enables easy assembly onto the shaft

OUTPUT OPTIONS:

- Patented (U.S. Patent Number 5,496,127) Stainless Steel Double Sided Bushing Mounted into Stainless Steel Output Quill — easily mounts onto standard cold finished, ground, or stainless shafting.
- Single side output shaft
- Hollow output

Silver Bullet AM™ is a registered trademark of Burke Industrial Coatings.

Mounting Position must be specified when ordering. See Page 246.



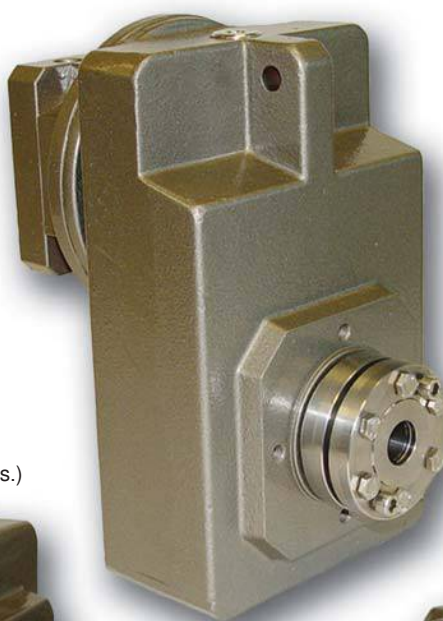
ServoFit® Gearheads Beverage and Food Duty

Beverage and Food Duty

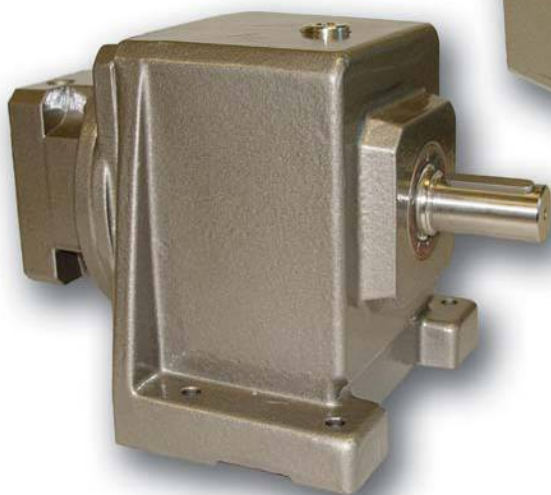
- Totally Enclosed
- Lubricated for Life
- Maintenance Free



"F" Series Hollow Output.
(Stainless steel output is not available in all sizes.)



"C" Series Solid Shaft
(Stainless steel output is not available in all sizes.)



"P" and "PKX" Series Precision Planetary – Sizes 3 thru 5
(Stainless steel output is not available in all sizes.)

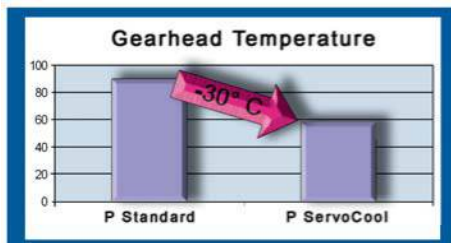
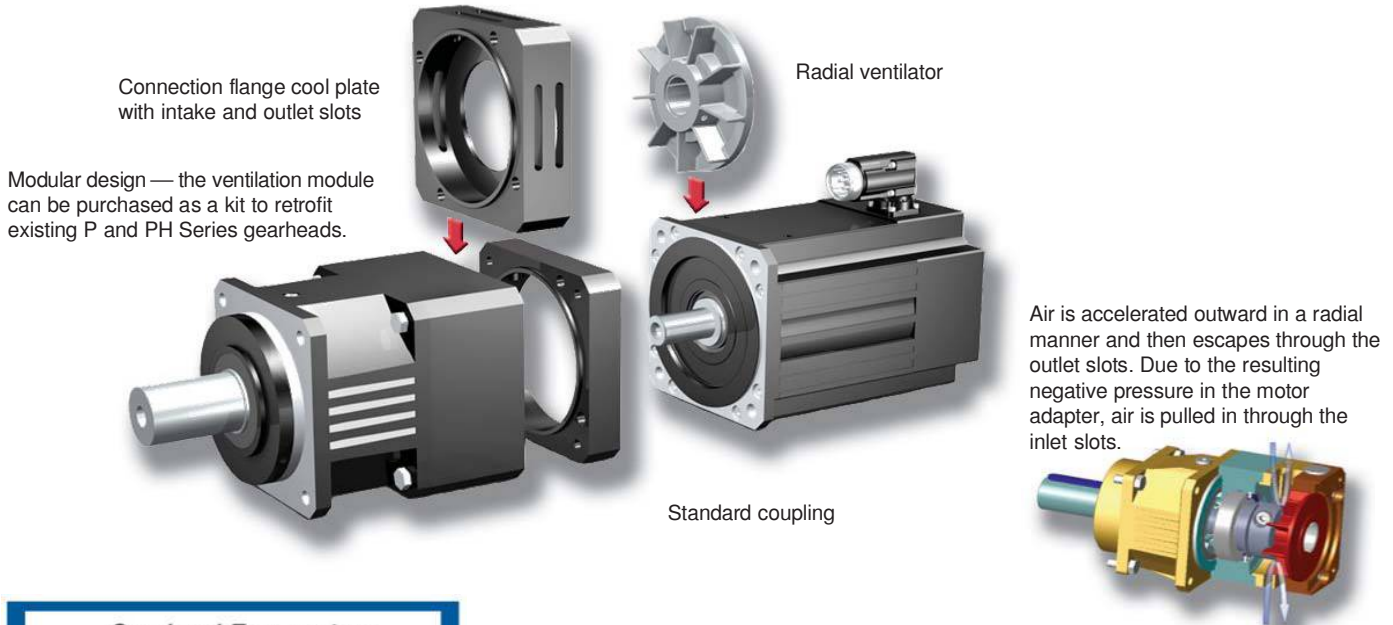
Silver Bullet AM® is a registered trademark of Burke Industrial Coatings.

Mounting Position must be specified when ordering. See Page 246.

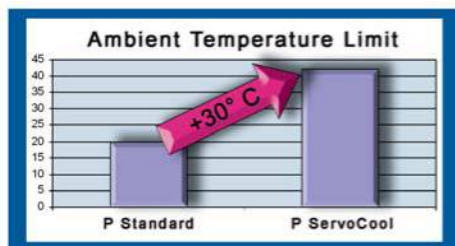
ServoFit® Gearheads ServoCool



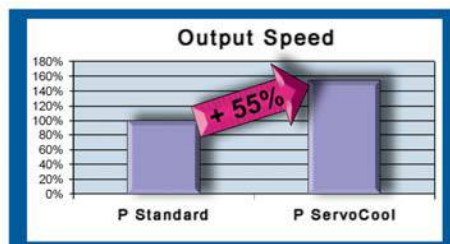
The compact design of planetary gearhead allows very little area for heat dissipation. While the STOBER Precision Planetary Gearhead has the lowest operating temperature available, even its rating in continuous applications is limited by heat, especially with large planetaries or units with small ratios. The ServoCool planetary gearhead is made possible by adding a ventilation module to the existing ServoFit Precision Planetary Gearhead. These units are currently available in P and PH Series.



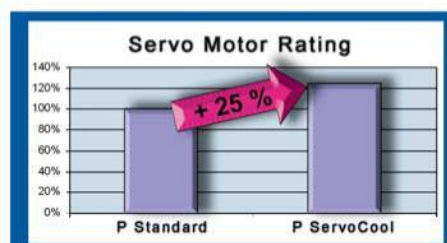
According to data from lubricant suppliers, the lifespan of oil doubles, at certain temperatures, if operating temperature is reduced by 10°C. Adding the ServoCool ventilator reduces gearhead temperature 22°C — quadrupling the expected lubricant life.



- Synthetic oil
- Lower temperature means longer life
- Lubricated for life — maintenance free solutions



- Ventilator fan mounts to motor shaft
- Forced air ventilation improves performance
- Modular design "fits" existing units
- Optional for P and PH Series



- Increased motor performance
- No added motor
- No additional wiring
- More compact than external motor fan

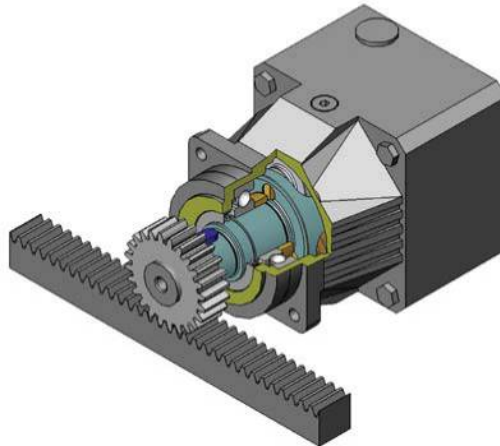


ServoFit® Gearheads "P" Series – Precision Planetary Output Shaft Loads

"R" – Deep Groove Ball Bearing

Characteristics:

- Minimal frictional torque
- Good Radial load capacity
- Axial load approx. 35% of radial



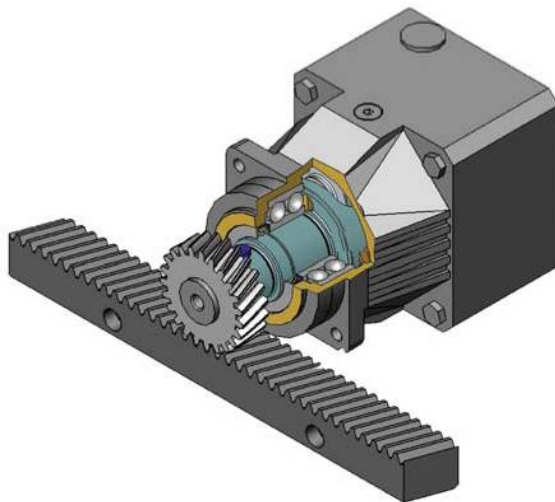
Applications:

- Spur geared rack/pinion
- Couplings
- Belt with or without light tension

"D" – Double Row Angular

Characteristics:

- Low frictional torque
- Good radial bearing capacity
- Axial load approx. 50% of radial



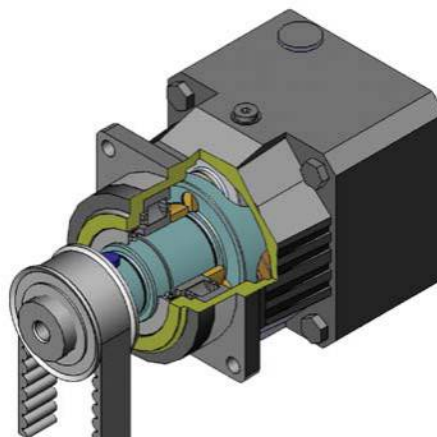
Applications:

- Helical geared rack/pinion
- Couplings with high axial load
- Belt with or without light tension

"Z" – Cylindrical Roller Bearing

Characteristics:

- Very good radial load capacity
- Axial load approx. 20% of radial load



Applications:

- Prestressed belt drive
- Prestressed spur rack drive
- Applications with high radial loads and/or high service requirements

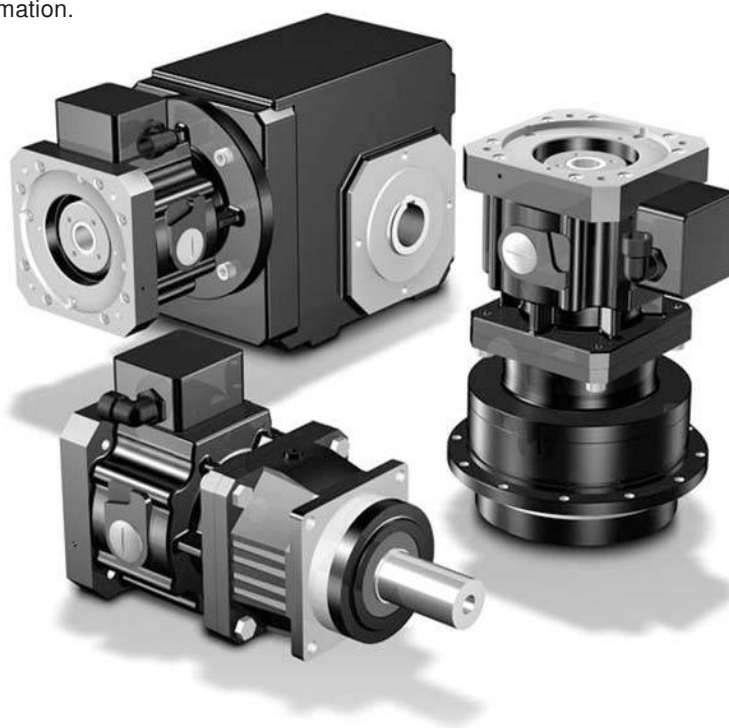
See Page 239 for shaft load.

ServoStop Motor Adapter with Integrated Brake

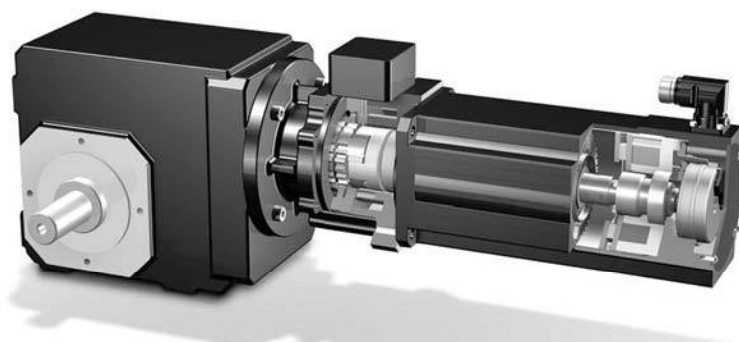


Available with the following units:

- ServoFit Precision Planetary Gearheads — P, PA, PH, and PHA
- Right Angle Planetary Gearheads — PK and PHK
- ServoFit Modular System Gearheads — C, F, and K
- See www.stober.com for more information.



- Saves braking at EMERGENCY STOP and power cut
- High durability even at EMERGENCY STOP
- Motor horizontal is recommended but if vertical, mount with motor up.
- Prevents accidental sliding or falling of vertical axis with gravity load absolutely reliable
- Compactness due to integration into gear reducer
- Plug-in coupling allows easy dismounting of servo motor in every position even with brake engaged
- Available with electrical or manual wear control for added safety.
- Manual hand release available
- Fits all standard servo motors
- IP54 Rated
- CSA Approved

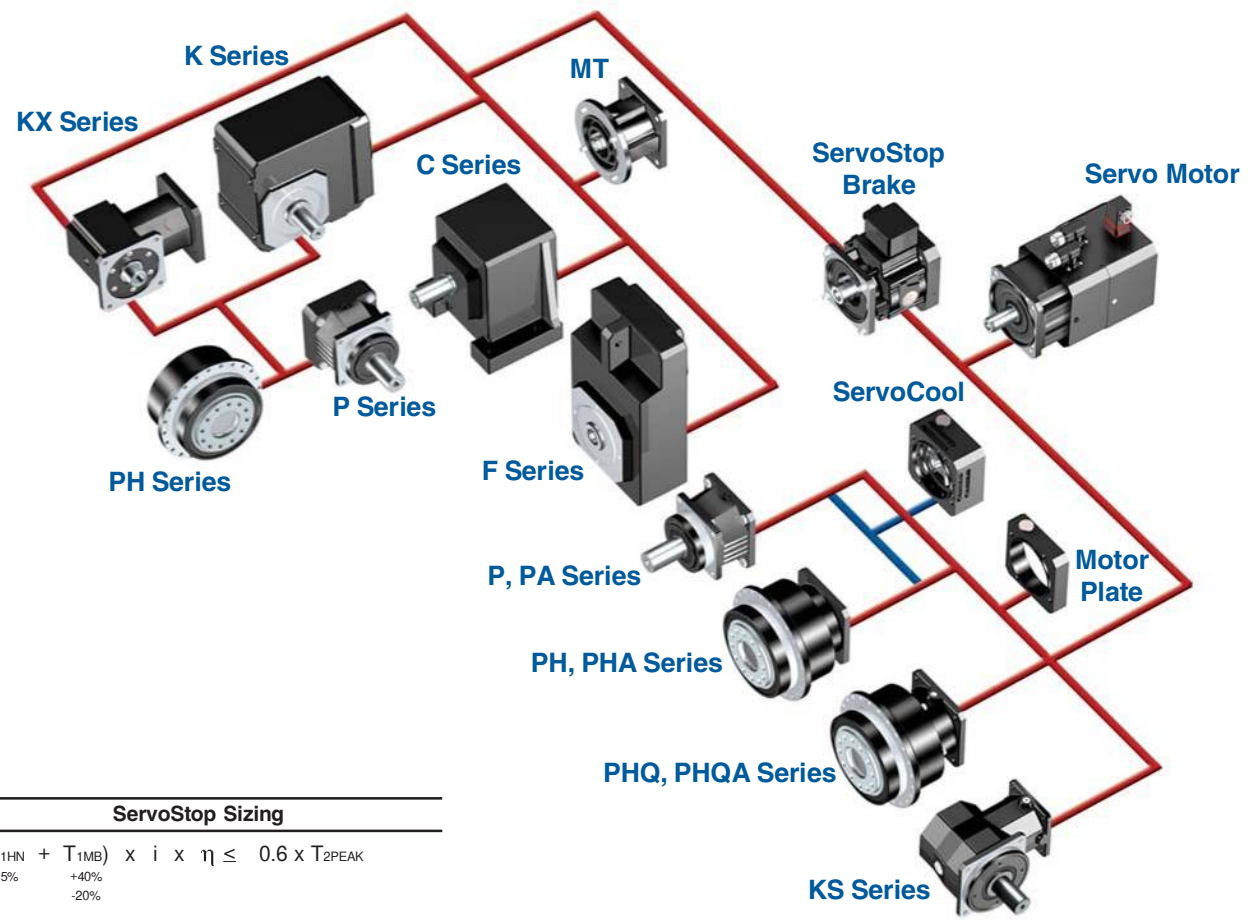


Motor adapter integrated brake module provides redundant braking during power failures or emergency stops in hazardous situations.



ServoStop Motor Adapter with Integrated Brake

Combinations of series with ServoStop brakes now available from STOBER Drives Inc.



ServoStop Sizing

$$\left(T_{1HN} \pm 15\% + T_{1MB} \pm 40\% \right) \times i \times \eta \leq 0.6 \times T_{2PEAK} \pm 20\%$$

where:

- T_{1HN} = ServoStop Braking Torque
- T_{1MB} = Servo Motor Braking Torque
- i = Ratio
- η = Efficiency of Gear Reducer
- T_{2PEAK} = Peak Output Torque of Gear Reducer

Part No. and Capacity

Unit Series/Brake No.			T _{1HN} — Braking Torque							
C, F, K PK, PHK	P PA	PH PHA	Nm		inlbs		Nm		inlbs	
MB20	MB21	MB22	8	71	12	106	16	142	24	212
MB30	MB31	MB32	16	142	24	212	32	283	45	398
MB40	MB41	MB42	—	—	50	442	72	637	100	885

THE FOLLOWING INFORMATION IS REQUIRED FOR ANY UNIT:

- Coil Voltage — 24 Volt, 104 Volt
- Hand Release — Yes, No
- Braking Torque — See above table.

ServoFit® Gearhead Application Support



ServoSoft® application sizing software:

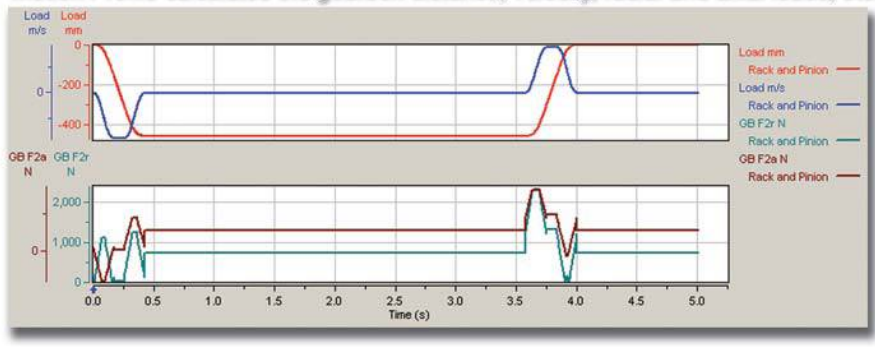
- Extremely accurate
- Sizes for peak and nominal torques
- Sizes for peak and nominal speeds
- Radial and axial loads
- Data base for all STOBER servo products

Professional Sizing Software

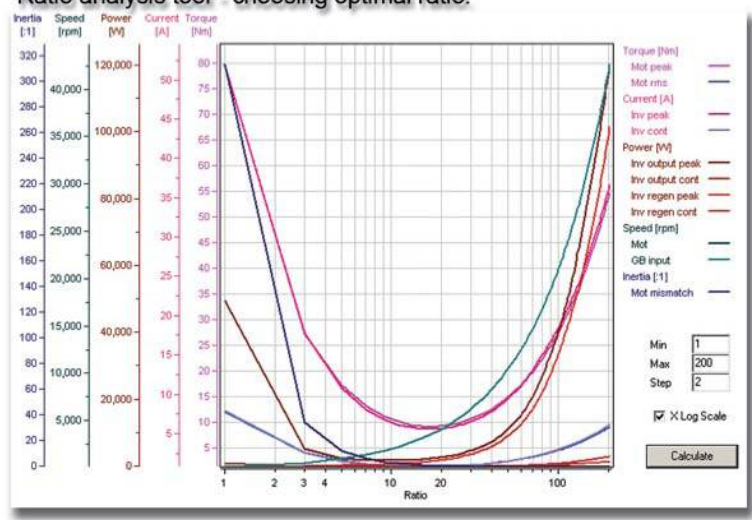
Sizing for 11 Different Types of Drive Mechanisms

- Rotary Axis
- Belt & Pulley
- Conveyor
- Dual Conveyor
- Ball Screw
- Rack & Pinion
- Dual Rack & Pinion
- Feed Roll
- Winder (center driven)
- Winder (surface driven)
- Slider Crank

Motion Profile calculates the gearbox distance, velocity, radial and axial loads, etc.



Ratio analysis tool - choosing optimal ratio.



ServoSoft® is a registered trademark of ControlEng Corporation.



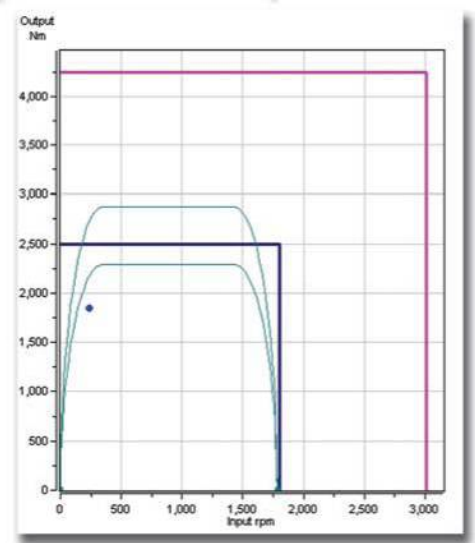
ServoFit® Gearhead Application Support

Data Base of ALL STOBER servo products

Vendor	Model	Typ1	Typ2	i	s	d1 max (mm)
STOBER	K914_1890 MT40/38	Hollow	Shaft	188.757	4	38
STOBER	K914_1920 MT30/32	Hollow	Shaft	191.67	4	32
STOBER	K914_2430 MT40/38	Hollow	Shaft	243.275	4	38
STOBER	K914_2470 MT30/32	Hollow	Shaft	247.029	4	32
STOBER	K914_2940 MT30/32	Hollow	Shaft	293.764	4	32
STOBER	K914_3740 MT30/32	Hollow	Shaft	373.696	4	32
STOBER	P221_0040 KX301 VF01	Hollow	Shaft	4	2	19
STOBER	P221_0040 KX301 VF01	Hollow	Shaft	8	2	19
STOBER	P221_0040 KX301 VF01	Hollow	Shaft	12	2	19
STOBER	P221_0040 MT/11	Hollow	Shaft	4	1	11
STOBER	P221_0040 MT/14	Hollow	Shaft	4	1	14
STOBER	P221_0040 MT/9	Hollow	Shaft	4	1	9
STOBER	P221_0040 MTL/19	Hollow	Shaft	4	1	19
STOBER	P221_0050 KX301 VF01	Hollow	Shaft	5	2	19
STOBER	P221_0050 KX301 VF01	Hollow	Shaft	10	2	19
STOBER	P221_0050 KX301 VF01	Hollow	Shaft	15	2	19
STOBER	P221_0050 MT/11	Hollow	Shaft	5	1	11
STOBER	P221_0050 MT/14	Hollow	Shaft	5	1	14



Gear Reducer performance data



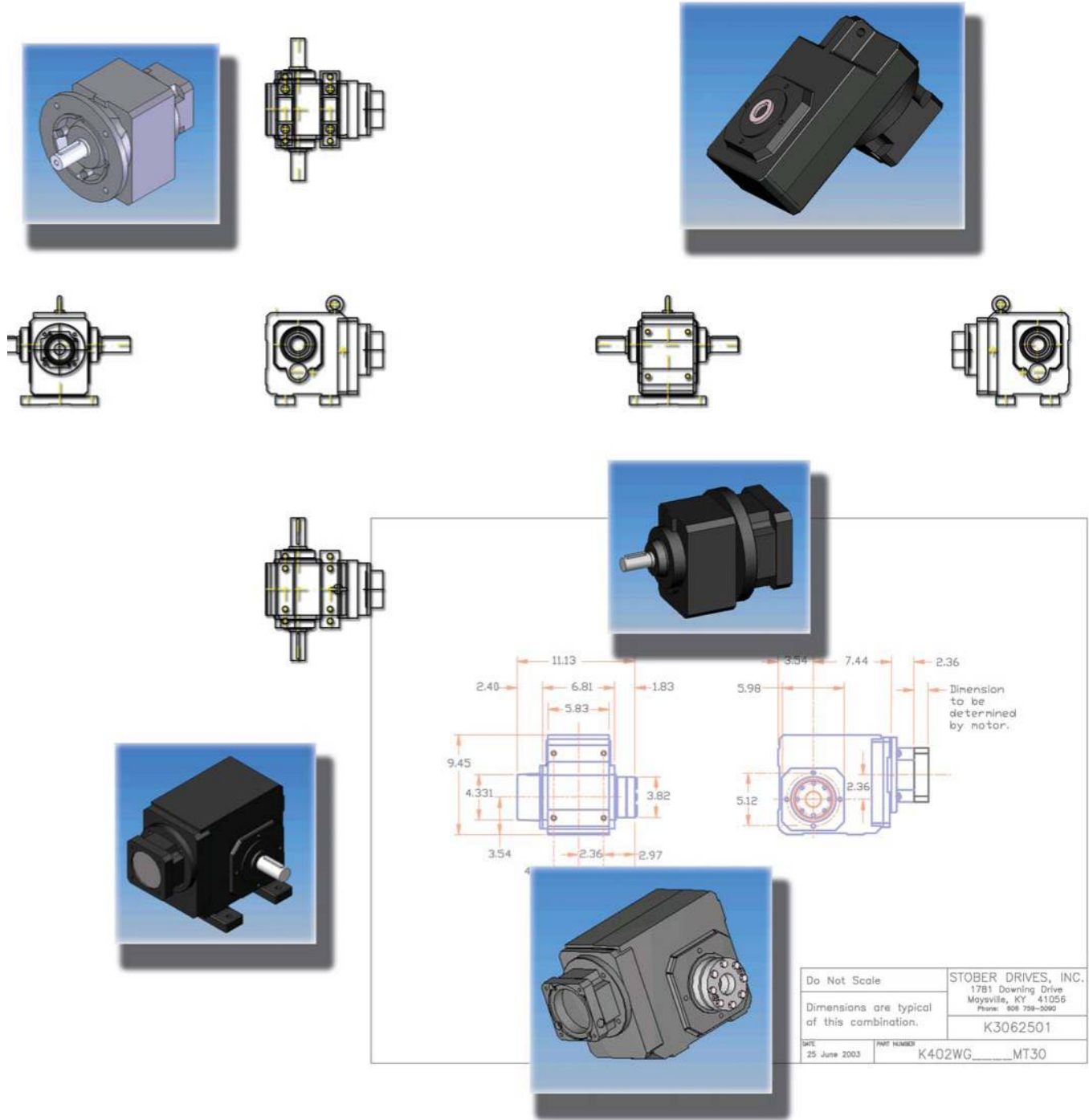
ServoFit® Gearhead Application Support



Drawings are available in a format to suit your application. We can provide eDrawings, 2D, 3D, CAD drawings with six views, or certified faxable prints.

The eDrawing application gives you the power to view 3D models and 2D drawings with no special software. The viewer and drawing are contained in one simple download. eDrawings eliminate the communication barriers that designers and engineers deal with daily. They are small enough to email, are self-viewing, and significantly easier to understand, plus, there is no more uncertainty about whether the recipient will be able to open and view the drawing file you send.

Check our web site (www.stober.com) for product drawings in the configuration you need. Call Technical Support for information that is not shown or e-mail sales@stober.com or drawings@stober.com with your request.

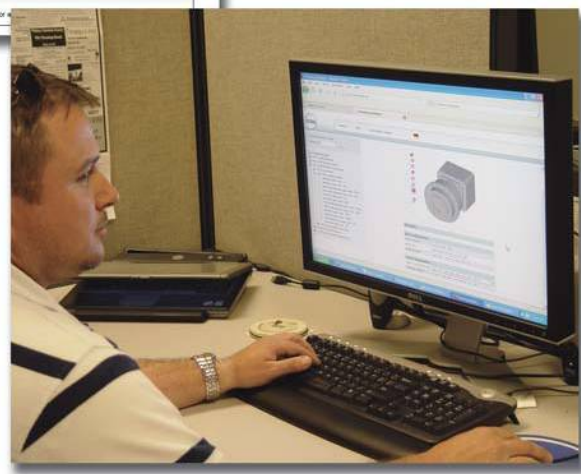
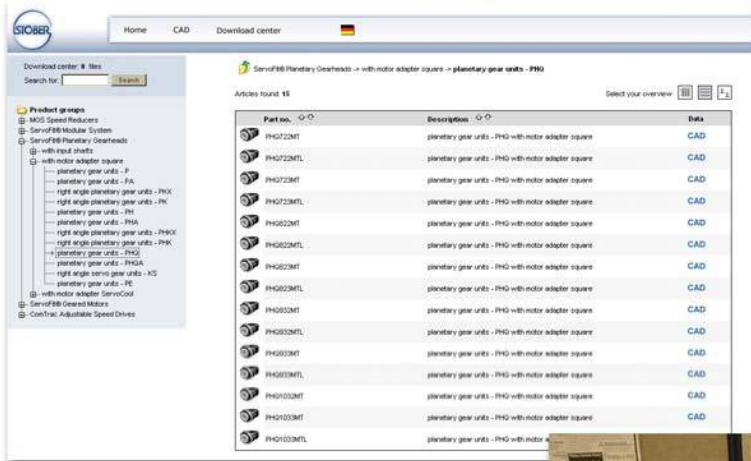
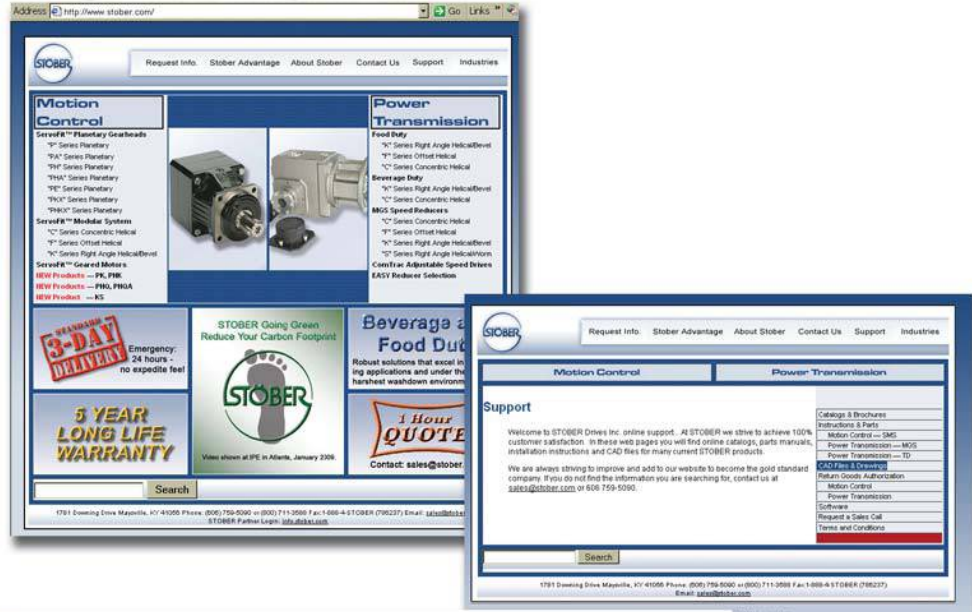


Do Not Scale	STOBER DRIVES, INC. 1781 Downing Drive Maysville, KY 41056 Phone: 606 798-3090
Dimensions are typical of this combination.	K3062501
DATE 25 June 2003	PART NUMBER K402WG____MT30



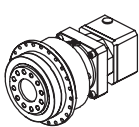
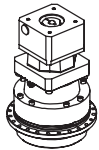
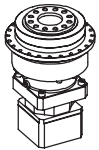
ServoFit® Gearhead Application Support

Drawing files for STOBER products from the web.



"PHQ" Series ServoFit® Precision Planetary Gearhead Performance Specification Overview



Size		PHQ722	PHQ723	PHQ822	PHQ823	PHQ932	PHQ933	PHQ1032	PHQ1033
Acceleration Torque M _{2B} MAX	in.lbs.	8,408		23,010		53,100		88,500	
	Nm	950		2,600		6,000		10,000	
Output Torque Nom. ¹⁾ M _{2N}	in.lbs.	5,752		15,045		33,660		57,577	
	Nm	650		1,700		3,800		6,500	
Input Speed Max. n ₁ MAX	Continuous	3,700	4,000	3,300	3,700	2,800	3,300	2,500	2,800
	Cyclic	6,500	7,000	6,000	6,500	4,500	6,000	4,000	4,500
Torsional Backlash Max. ²⁾ Δφ	arcmin	≤3		≤3		≤3		≤3	
Torsional Stiffness C ₂	in.lbs./arcmin	≤1,840		≤5,840		≤10,885		≤18,320	
	Nm/arcmin	≤208		≤660		≤1,230		≤2,068	
Axial Load Max. ³⁾ F _{2AMAX}	lbs.	1,384		2,261		7,425		11,250	
	N	6,150		10,050		33,000		50,000	
Tilting Moment Max. ³⁾ M _{2Kmax}	in.lbs.	13,275		30,975		66,375		77,880	
	Nm	1,500		3,500		7,500		8,800	
Tilting Stiffness C _{2K}	in.lbs./arcmin	4,425		13,718		66,375		84,075	
	Nm/arcmin	500		1,550		7,500		9,500	
Weight m	pounds	36	38	96	98	189	196	261	293
	kg	16.3	17.1	43.6	44.3	85.6	88.9	118.2	132.7
Noise Level ⁴⁾ LPA	dB(A)	≤62		≤63		≤65		≤64	
Efficiency (at Nom. Torque) h	%	≥ 90% — 93%							
Degree of Protection		IP65 - FKM Shaft Seals							
Lubrication		Synthetic Oil — Lubricated for Life							
Mounting Position		<p>For 3-stage units (ratios ≥72:1), the amount of lubrication depends on the mounting position. ON THESE UNITS THE MOUNTING POSITION MUST BE SPECIFIED</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p style="text-align: center;"> EL1 EL5 EL6 </p>							
Ambient Temperature		0° C to +40° C (104° F) [Unit temperature ≤ 90° C Max.]							
Finish		Black (RAL 9005)							
Bearing Lifetime ⁵⁾ L _h	hours	L _h > 10,000 hours if M _{2K} /M _{2A} < 1.25 and > 1.00 L _h > 20,000 hours if M _{2K} /M _{2A} > 1.25 and < 1.50 L _h > 30,000 hours if M _{2K} /M _{2A} > 1.5							
Warranty		5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)							

¹⁾ Ratings based on input speed (n₁) of 2000 RPM.

For torque at higher input speeds (M_{2NX}) solve the formula, where n₁ = 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.

³⁾ Rating based on output speed (n₂) of 100 RPM. For values at other speeds see Page 241.

⁴⁾ Measurement at one (1) meter distance with input speed (n₁) of 3000 RPM.

⁵⁾ M_{2A} equals actual tilting moment of the application. See Page 241 for calculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to use a grade 12.9 fastener on all output connections.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.



"PHQ" Series ServoFit® Precision Planetary Gearhead Features

The "PHQ" Series ServoFit Precision Planetary Gearheads is a four-planet system allowing the torque to be distributed over 4 planets instead of 3, resulting in an increase in output torque of $\geq 35\%$ and an increase in torsional rigidity of $\geq 80\%$.

Some other features are:

- Readily Attaches to Any Servo Motor (IEC, NEMA, or Customized Motor Plates*)
- 5 Year Limited Warranty (2 years on bearings, seals, etc.)
- Low Backlash
- High Input Speeds
- Ratios up to 600:1
- Advanced Gear Technology
- Up to 93% Efficiency
- Quiet Running
- Assembled in the U.S.A.



High tensile tempered steel single-piece housing

Ring gear machined integral to the housing — not welded or pressed in — and case-hardened, finish-ground sun and planet gears, provide greater concentricity and eliminates speed fluctuation

The patented TriAdapt® motor coupling is designed to allow thermal expansion of the motor shaft — ensuring long motor life by preventing thrust load on the motor bearings.

The TriAdapt® motor shaft adapter system allows installation of motor in minutes — no special tools required

PHQ



Lubricated for life with high-quality synthetic oil. Input bearing with shields and high temperature grease provide maintenance free operation.

Motor plate can easily be changed to fit your choice of motors

Motor plate pilot toleranced to fit your motor for precise concentricity

Adapter bushings to fit all motor shafts — no key required

Oversized, single-piece planet carrier, made of high tensile material, enables use of higher load capacity bearings and provides highest torsional stiffness possible.

FKM seals for the smallest possible diameter— reduces friction and heat buildup, increases efficiency, and allows continuous duty without additional cooling.

Also available as a right angle drive. Contact STOBER Drives.





"PHQ" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio i	Maximum Input Speed		Maximum Motor Shaft øD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin		Output Torque					
		Continuous RPM (n ₁)	Cyclic RPM (n ₁)			C ₂		Nominal ²⁾		Acceleration		Peak ³⁾	
						in.lbs.	Nm	M _{2N}	Nm	M _{2B}	Nm	M _{2PEAK}	Nm

PHQ722 with Motor Mounting Plate

PHQ722F0220 MT	22.00	3,000	5,000	32	4.69	1,837.0	207.4	5,758	650	8,415	950	15,059	1,700
PHQ722F0220 MTL	22.00	3,000	5,000	38	7.72	1,837.0	207.4	5,758	650	8,415	950	15,059	1,700
PHQ722F0280 MT	27.50	3,500	6,000	32	4.22	1,823.1	205.8	5,758	650	8,415	950	15,059	1,700
PHQ722F0280 MTL	27.50	3,500	6,000	38	7.24	1,823.1	205.8	5,758	650	8,415	950	15,059	1,700
PHQ722F0390 MT	38.50	3,700	6,500	32	3.84	1,795.5	202.7	5,758	650	8,415	950	15,059	1,700
PHQ722F0390 MTL	38.50	3,700	6,500	38	6.89	1,795.5	202.7	5,758	650	8,415	950	15,059	1,700
PHQ722F0550 MT	55.00	3,700	6,500	32	3.66	1,731.0	195.4	5,758	650	8,415	950	15,059	1,700
PHQ722F0550 MTL	55.00	3,700	6,500	38	6.71	1,731.0	195.4	5,758	650	8,415	950	15,059	1,700

PHQ723 with Motor Mounting Plate

PHQ723F0880 MT	88.00	3,300	6,000	24	1.63	1,807.6	204.1	5,758	650	8,415	950	15,059	1,700
PHQ723F0880 MTL	88.00	3,300	6,000	32	3.86	1,807.6	204.1	5,758	650	8,415	950	15,059	1,700
PHQ723F1100 MT	110.0	3,300	6,000	24	1.60	1,804.5	203.7	5,758	650	8,415	950	15,059	1,700
PHQ723F1100 MTL	110.0	3,300	6,000	32	3.83	1,804.5	203.7	5,758	650	8,415	950	15,059	1,700
PHQ723F1380 MT	137.5	3,700	6,500	24	1.48	1,803.1	203.6	5,758	650	8,415	950	15,059	1,700
PHQ723F1380 MTL	137.5	3,700	6,500	32	3.70	1,803.1	203.6	5,758	650	8,415	950	15,059	1,700
PHQ723F1540 MT	154.0	4,000	7,000	24	1.35	1,799.8	203.2	5,758	650	8,415	950	15,059	1,700
PHQ723F1540 MTL	154.0	4,000	7,000	32	3.61	1,799.8	203.2	5,758	650	8,415	950	15,059	1,700
PHQ723F1930 MT	192.5	4,000	7,000	24	1.34	1,799.5	203.2	5,758	650	8,415	950	15,059	1,700
PHQ723F1930 MTL	192.5	4,000	7,000	32	3.60	1,799.5	203.2	5,758	650	8,415	950	15,059	1,700
PHQ723F2200 MT	220.0	4,000	7,000	24	1.29	1,787.2	201.8	5,758	650	8,415	950	15,059	1,700
PHQ723F2200 MTL	220.0	4,000	7,000	32	3.55	1,787.2	201.8	5,758	650	8,415	950	15,059	1,700
PHQ723F2750 MT	275.0	4,000	7,000	24	1.28	1,791.4	202.2	5,758	650	8,415	950	15,059	1,700
PHQ723F2750 MTL	275.0	4,000	7,000	32	3.55	1,791.4	202.2	5,758	650	8,415	950	15,059	1,700
PHQ723F3850 MT	385.0	4,000	7,000	24	1.28	1,779.2	200.9	5,758	650	8,415	950	15,059	1,700
PHQ723F3850 MTL	385.0	4,000	7,000	32	3.54	1,779.2	200.9	5,758	650	8,415	950	15,059	1,700
PHQ723F5500 MT	550.0	4,000	7,000	24	1.28	1,723.5	194.6	5,758	650	8,415	950	15,059	1,700
PHQ723F5500 MTL	550.0	4,000	7,000	32	3.54	1,723.5	194.6	5,758	650	8,415	950	15,059	1,700

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¹⁾ Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

²⁾ Based on input speed: n₁ = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n₁ = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

³⁾ Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.



"PHQ" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio i	Maximum Input Speed		Maximum Motor Shaft øD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin C ₂		Output Torque					
		Continuous RPM (n ₁)	Cyclic			in.lbs.	Nm	Nominal ²⁾ M _{2N}		Acceleration M _{2B}		Peak ³⁾ M _{2PEAK}	
								in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm

PHQ822 with Motor Mounting Plate

PHQ822F0220 MT	22.00	2,500	4,500	38	11.00	5,855.1	661.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0220 MTL	22.00	2,500	4,500	48	28.85	5,855.1	661.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0280 MT	27.50	3,000	5,500	38	9.25	5,810.8	656.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0280 MTL	27.50	3,000	5,500	48	27.10	5,810.8	656.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0390 MT	38.50	3,300	6,000	38	7.87	5,695.7	643.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0390 MTL	38.50	3,300	6,000	48	26.18	5,695.7	643.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0550 MT	55.00	3,300	6,000	38	7.20	5,447.7	615.0	14,031	1,584	23,031	2,600	35,432	4,000
PHQ822F0550 MTL	55.00	3,300	6,000	48	25.50	5,447.7	615.0	14,031	1,584	23,031	2,600	35,432	4,000

PHQ823 with Motor Mounting Plate

PHQ823F0880 MT	88.00	3,000	5,000	32	4.81	5,731.1	647.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F0880 MTL	88.00	3,000	5,000	38	7.84	5,731.1	647.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1100 MT	110.0	3,000	5,000	32	4.70	5,731.1	647.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1100 MTL	110.0	3,000	5,000	38	7.73	5,731.1	647.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1380 MT	137.5	3,500	6,000	32	4.22	5,722.3	646.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1380 MTL	137.5	3,500	6,000	38	7.25	5,722.3	646.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1540 MT	154.0	3,700	6,500	32	3.88	5,713.4	645.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1540 MTL	154.0	3,700	6,500	38	6.93	5,713.4	645.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1930 MT	192.5	3,700	6,500	32	3.85	5,713.4	645.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1930 MTL	192.5	3,700	6,500	38	6.90	5,713.4	645.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F2200 MT	220.0	3,700	6,500	32	3.68	5,678.0	641.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F2200 MTL	220.0	3,700	6,500	38	6.73	5,678.0	641.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F2750 MT	275.0	3,700	6,500	32	3.66	5,695.7	643.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F2750 MTL	275.0	3,700	6,500	38	6.71	5,695.7	643.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F3850 MT	385.0	3,700	6,500	32	3.65	5,624.8	635.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F3850 MTL	385.0	3,700	6,500	38	6.70	5,624.8	635.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F5500 MT	550.0	3,700	6,500	32	3.64	5,412.2	611.0	14,031	1,584	23,031	2,600	35,432	4,000
PHQ823F5500 MTL	550.0	3,700	6,500	38	6.69	5,412.2	611.0	14,031	1,584	23,031	2,600	35,432	4,000

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MT Motor adapter with TriAdapt® coupling	n ₁ Maximum input speed RPM	M _{2B} Acceleration Torque Maximum
MF Motor adapter with FlexiAdapt® coupling	J ₁ Mass moment of inertia (input)	M _{2PEAK} Peak Torque
L Large Input	C ₂ Torsional Stiffness	
i Ratio - Exact	M _{2N} Nominal Torque	



"PHQ" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft øD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin		Output Torque					
		Continuous RPM (n ₁)	Cyclic RPM (n ₁)			C ₂		Nominal ²⁾		Acceleration		Peak ³⁾	
						in.lbs.	Nm	M _{2N}	Nm	M _{2B}	Nm	M _{2PEAK}	Nm

PHQ932 with Motor Mounting Plate

PHQ932F0180 MT	18.00	1,800	3,000	48	71.30	10,961.3	1,237.4	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0180 MTL	18.00	1,800	3,000	60	94.25	10,808.4	1,220.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0240 MT	24.00	2,200	3,500	48	42.54	10,851.3	1,225.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0240 MTL	24.00	2,200	3,500	60	65.49	10,766.5	1,215.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0300 MT	30.00	2,500	4,000	48	35.62	10,752.9	1,213.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0300 MTL	30.00	2,500	4,000	60	58.57	10,699.4	1,207.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0420 MT	42.00	2,800	4,500	48	29.79	10,580.9	1,194.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0420 MTL	42.00	2,800	4,500	55	57.80	10,554.4	1,191.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0600 MT	60.00	2,800	4,500	48	27.07	10,180.8	1,149.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0600 MTL	60.00	2,800	4,500	55	55.09	10,168.8	1,148.0	33,660	3,800	53,148	6,000	106,296	12,000

PHQ933 with Motor Mounting Plate

PHQ933F0720 MT	72.00	2,200	4,500	38	13.04	10,676.6	1,205.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F0720 MTL	72.00	2,200	4,500	48	30.89	10,676.6	1,205.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F0960 MT	96.00	2,500	4,500	38	11.25	10,692.5	1,207.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F0960 MTL	96.00	2,500	4,500	48	29.10	10,692.5	1,207.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1200 MT	120.0	2,500	4,500	38	10.81	10,652.6	1,202.6	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1200 MTL	120.0	2,500	4,500	48	28.66	10,652.6	1,202.6	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1500 MT	150.0	3,000	5,500	38	9.13	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1500 MTL	150.0	3,000	5,500	48	26.98	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1680 MT	168.0	3,300	6,000	38	7.96	10,660.6	1,203.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1680 MTL	168.0	3,300	6,000	48	26.26	10,660.6	1,203.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F2100 MT	210.0	3,300	6,000	38	7.81	10,632.3	1,200.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F2100 MTL	210.0	3,300	6,000	48	26.12	10,632.3	1,200.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F2400 MT	240.0	3,300	6,000	38	7.24	10,607.8	1,197.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F2400 MTL	240.0	3,300	6,000	48	25.54	10,607.8	1,197.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F3000 MT	300.0	3,300	6,000	38	7.17	10,598.6	1,196.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F3000 MTL	300.0	3,300	6,000	48	25.47	10,598.6	1,196.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F4200 MT	420.0	3,300	6,000	38	7.11	10,488.0	1,184.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F4200 MTL	420.0	3,300	6,000	48	25.42	10,488.0	1,184.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F6000 MT	600.0	3,300	6,000	38	7.09	10,138.5	1,144.6	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F6000 MTL	600.0	3,300	6,000	48	25.39	10,138.5	1,144.6	33,660	3,800	53,148	6,000	106,296	12,000

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¹⁾ Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.
²⁾ Based on input speed: n₁ = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n₁ = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$
³⁾ Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.



"PHQ" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio i	Maximum Input Speed		Maximum Motor Shaft øD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin C ₂		Output Torque					
		Continuous RPM (n ₁)	Cyclic			in.lbs.	Nm	Nominal ²⁾ M _{2N}		Acceleration M _{2B}		Peak ³⁾ M _{2PEAK}	
								in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm

PHQ1032 with Motor Mounting Plate

PHQ1032F0240 MT	24.00	2,000	3,000	60	95.79	18,268.8	2,062.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1032F0300 MT	30.00	2,200	3,500	60	77.22	18,232.6	2,058.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1032F0420 MT	42.00	2,500	4,000	60	62.49	18,070.9	2,040.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1032F0600 MT	60.00	2,500	4,000	60	55.17	17,454.3	1,970.5	57,577	6,500	88,580	10,000	177,160	20,000

PHQ1033 with Motor Mounting Plate

PHQ1033F0960 MT	96.00	2,200	3,500	48	43.73	18,320.3	2,068.2	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F0960 MTL	96.00	2,200	3,500	60	66.68	18,305.1	2,066.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1200 MT	120.0	2,200	3,500	48	42.57	18,265.4	2,062.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1200 MTL	120.0	2,200	3,500	60	65.52	18,255.7	2,060.9	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1500 MT	150.0	2,500	4,000	48	35.64	18,254.1	2,060.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1500 MTL	150.0	2,500	4,000	60	58.59	18,247.9	2,060.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1680 MT	168.0	2,800	4,500	48	30.18	18,282.5	2,064.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1680 MTL	168.0	2,800	4,500	55	58.19	18,277.6	2,063.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F2100 MT	210.0	2,800	4,500	48	29.80	18,241.3	2,059.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F2100 MTL	210.0	2,800	4,500	55	57.81	18,238.2	2,059.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F2400 MT	240.0	2,800	4,500	48	27.27	18,205.9	2,055.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F2400 MTL	240.0	2,800	4,500	55	55.28	18,203.5	2,055.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F3000 MT	300.0	2,800	4,500	48	27.08	18,196.1	2,054.2	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F3000 MTL	300.0	2,800	4,500	55	55.09	18,194.5	2,054.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F4200 MT	420.0	2,800	4,500	48	26.93	18,038.5	2,036.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F4200 MTL	420.0	2,800	4,500	55	54.95	18,037.7	2,036.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F6000 MT	600.0	2,800	4,500	48	26.86	17,439.5	1,968.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F6000 MTL	600.0	2,800	4,500	55	54.87	17,439.2	1,968.7	57,577	6,500	88,580	10,000	177,160	20,000

P
H
Q

Index of Symbols

MT Motor adapter with TriAdapt® coupling	n ₁ Maximum input speed RPM	M _{2B} Acceleration Torque Maximum
MF Motor adapter with FlexiAdapt® coupling	J ₁ Mass moment of inertia (input)	M _{2PEAK} Peak Torque
L Large Input	C ₂ Torsional Stiffness	
i Ratio - Exact	M _{2N} Nominal Torque	

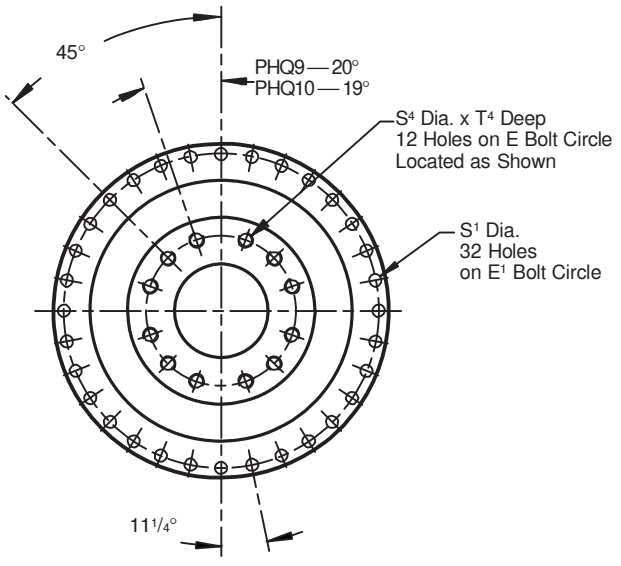
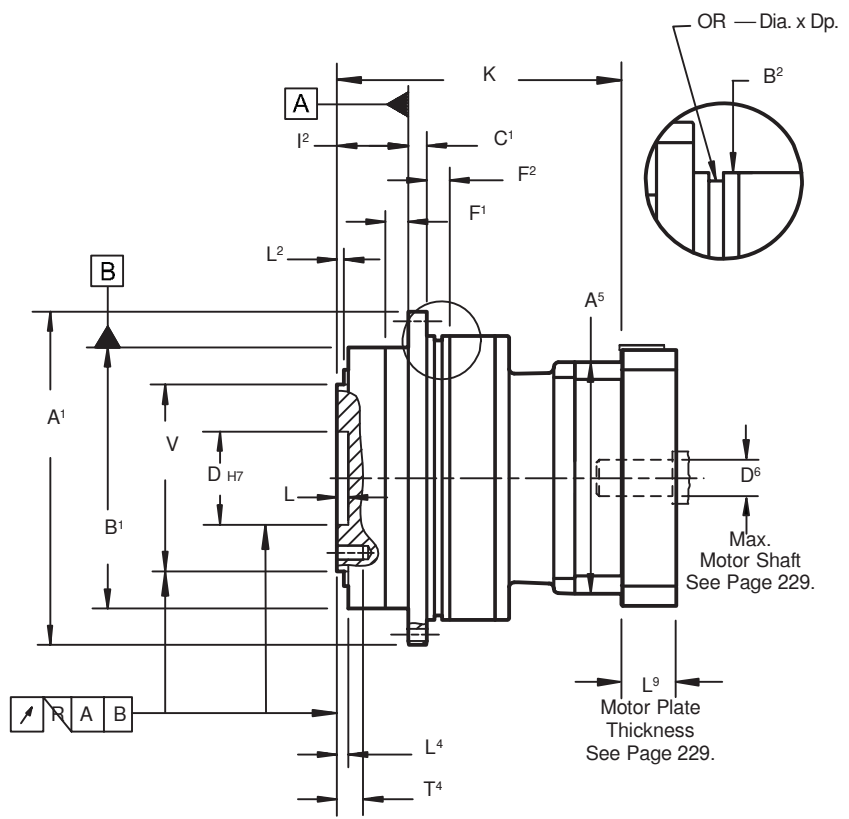
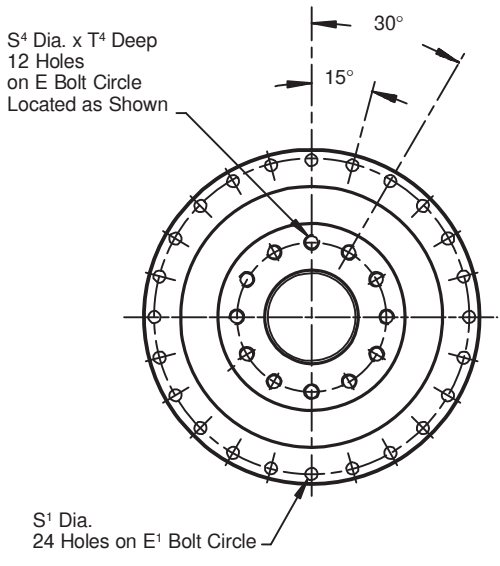


"PHQ" Series ServoFit® Precision Planetary Gearhead Dimensional Data



Drawing for Units
PHQ722 thru PHQ1033

PHQ7/PHQ8 OUTPUT SIDE

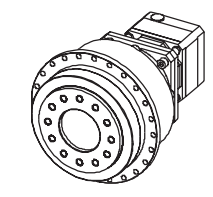


PHQ9/PHQ10 OUTPUT SIDE

If a planetary gearhead is to be mounted from "B²" side, specify when ordering. For proper mounting the paint must be eliminated and the tolerance held on that surface.



Side "B²" mounting is not possible with the Large Input.



Typical 3 Stage Configuration

Part No. Explanation

PHQ	8	2	2	F	0050	MT	L
"PHQ" Series Quattro Power ServoFit Precision Planetary Gearhead	Unit No.	Generation No.	No. of Stages (2 = 2 Stage, 3 = 3 Stage)	Output Flange	Ratio (0050 = 5.0:1)	Motor Plate with TriAdapt Coupling	Large Input Option

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)



"PHQ" Series ServoFit® Precision Planetary Gearhead Dimensional Data



Table No. 1 "PHQ" Series – Gearhead with Motor Plate – Dimensions (mm/inches)

Unit	A ¹ h7	B ¹ h7	B ² h7	C ¹	D H7	E	E ¹	F ¹	F ²	I ²	L	L ²	L ⁴	OR
PHQ722/PHQ723	179 +.000/-0.040	140 +.000/-0.040	152 +.000/-0.040	10	50 +.025/-0	80	168	12	12	38	6	6	6	145x3
	7.047 +.0000/-0.0016	5.513 +.0000/-0.0016	5.984 +.0000/-0.0016	.39	1.969 +.0010/-0.0000	3.15	6.61	.47	.47	1.50	.24	.24	.24	5.71x.12
PHQ822/PHQ823	247 +.000/-0.046	200 +.000/-0.046	212 +.000/-0.046	12	80 +.030/-0	125	233	15	15	50	8	8	8.5	200x5
	9.724 +.0000/-0.0018	7.874 +.0000/-0.0018	8.346 +.0000/-0.0018	.47	3.150 +.0012/-0.0000	4.92	9.17	.59	.59	1.97	.31	.31	.33	7.87x.20
PHQ932/PHQ933	300 —	255 +.000/-0.052	255 +.000/-0.052	18	90 +.035/-0	145	280	20	33	66	12	11	12	238x5
	11.811	10.039 +.000/-0.0020	10.039 +.000/-0.0020	.71	3.543 +.0014/-0.0000	5.71	11.02	.79	1.29	2.60	.47	.43	.47	9.37x.20
PHQ1032/PHQ1033	330 —	285 +.000/-0.057	285 +.000/-0.052	20	95 +.035/-0	166	310	20	75	10	15	15	15	270x6
	12.992	11.220 +.000/-0.0022	11.221 +.000/-0.0020	.79	3.740 +.0014/-0.0000	6.53	12.20	.79	.79	2.95	.39	.59	.59	10.63x.24

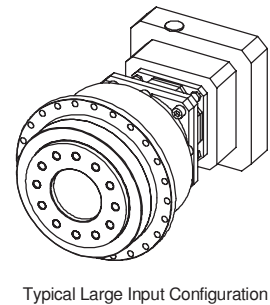
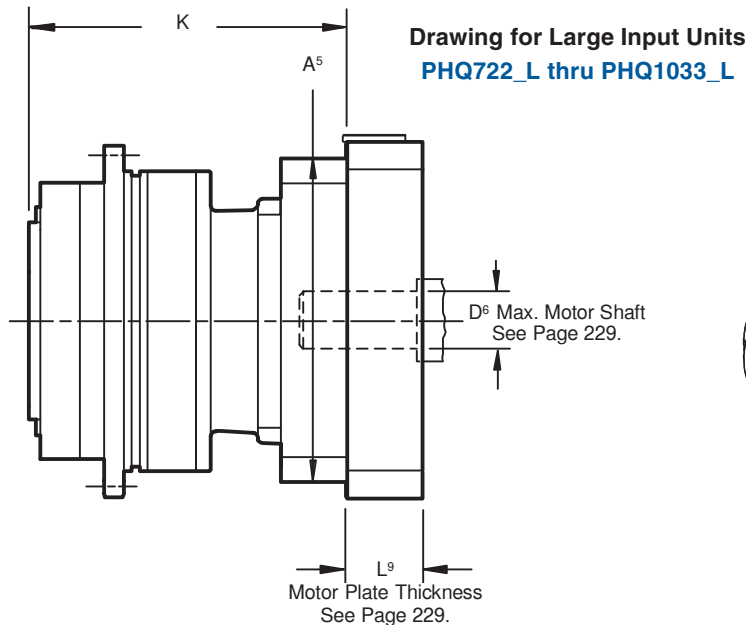
Table No. 2 "PHQ" Series – Dimensions (mm/inches)

Unit	R	S ¹	S ² H7	S ⁴	T ⁴	V h7
PHQ722/PHQ723	.025	6.6	8 +.015/-0.000	M10	16	100 +.000/-0.035
	.0010	.26	.315 +.0006/-0.0000		.63	3.937 +.000/-0.0014
PHQ822/PHQ823	.030	9	10 +.015/-0.000	M12	17	160 +.000/-0.040
	.0012	.35	.393 +.0006/-0.0000		.67	6.299 +.000/-0.0016
PHQ932/PHQ933	.030	13.5	—	M20	28	180 +.000/-0.040
	.0012	.53			1.10	7.087 +.000/-0.0016
PHQ1032/PHQ1033	.040 ⁽¹⁾	13.5	—	M24	35	200 +.000/-0.046
	.0016	.53			1.38	7.874 +.000/-0.0018

⁽¹⁾ "R" is .030 (.0012) for PHQ1033

Table No. 3 "PHQ" Series – Dimensions (mm/inches)

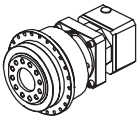
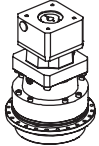
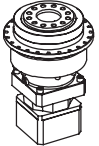
Unit	A ⁵		K — Standard		Unit	A ⁵		K — Large Input	
	mm	inches	mm	inches		mm	inches	mm	inches
PHQ722	115	4.53	190	7.48	PHQ722_L	145	5.71	204	8.03
PHQ723	100	3.94	236.5	9.31	PHQ723_L	115	4.53	248	9.76
PHQ822	145	5.71	251	9.88	PHQ822_L	190	7.48	268	10.55
PHQ823	115	4.53	303	11.93	PHQ823_L	145	5.71	204	8.03
PHQ932	190	7.48	349.5	13.74	PHQ932_L	225	8.85	357.5	14.07
PHQ933	145	5.71	417	16.42	PHQ933_L	190	7.48	434	17.08
PHQ1032	225	8.85	415	16.34	—	—	—	—	—
PHQ1033	190	7.48	503	19.80	PHQ1033_L	225	8.85	511	20.12



When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PHQA" Series ServoFit® Precision Planetary Gearhead Performance Specifications



Size		PHQA722	PHQA723	PHQA822	PHQA823	PHQA932	PHQA933	PHQA1032	PHQA1033
Acceleration Torque M _{2B} MAX	in.lbs.	8,408		23,010		53,100		88,500	
	Nm	950		2,600		6,000		10,000	
Output Torque Nom. ¹⁾ M _{2N}	in.lbs.	5,752		15,045		33,660		57,577	
	Nm	650		1,700		3,800		6,500	
Input Speed Max. n ₁ MAX	Continuous	3,700	4,000	3,300	3,700	2,800	3,300	2,500	2,800
	Cyclic	6,500	7,000	6,000	6,500	4,500	6,000	4,000	4,500
Torsional Backlash Max. ²⁾ Δφ	arcmin	≤1		≤1		≤1		≤1.5	
Torsional Stiffness C ₂	in.lbs./arcmin	≤1,840		≤5,840		≤10,885		≤18,320	
	Nm/arcmin	≤208		≤660		≤1,230		≤2,068	
Axial Load Max. ³⁾ F _{2AMAX}	lbs.	1,384		2,261		7,425		11,250	
	N	6,150		10,050		33,000		50,000	
Tilting Moment Max. ³⁾ M _{2Kmax}	in.lbs.	13,275		30,975		66,375		77,880	
	Nm	1,500		3,500		7,500		8,800	
Tilting Stiffness C _{2K}	in.lbs./arcmin	4,425		13,718		66,375		84,075	
	Nm/arcmin	500		1,550		7,500		9,500	
Weight m	pounds	36	38	96	98	189	196	261	293
	kg	16.3	17.1	43.6	44.3	85.6	88.9	118.2	132.7
Noise Level ⁴⁾ L _{PA}		≤62		≤63		≤65		≤64	
Efficiency (at Nom. Torque) h	%	≥ 90% — 93%							
Degree of Protection		IP65 - FKM Shaft Seals							
Lubrication		Synthetic Oil — Lubricated for Life							
Mounting Position		<p>For 3-stage units (ratios ≥72:1), the amount of lubrication depends on the mounting position. ON THESE UNITS THE MOUNTING POSITION MUST BE SPECIFIED</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p style="text-align: center;">EL1 EL5 EL6</p>							
Ambient Temperature		0° C to +40° C (104° F) [Unit temperature ≤ 90° C Max.]							
Finish		Black (RAL 9005)							
Bearing Lifetime ⁵⁾ L _h		L _h > 10,000 hours if M _{2K} /M _{2A} < 1.25 and > 1.00							
		L _h > 20,000 hours if M _{2K} /M _{2A} > 1.25 and < 1.50							
Warranty		L _h > 30,000 hours if M _{2K} /M _{2A} > 1.5							
		5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)							

PHQA

¹⁾ Ratings based on input speed (n₁) of 2000 RPM.

For torque at higher input speeds (M_{2NX}) solve the formula, where n₁ = 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.

³⁾ Rating based on output speed (n₂) of 100 RPM. For values at other speeds, see Page 241.

⁴⁾ Measurement at one (1) meter distance with input speed (n₁) of 3000 RPM.

⁵⁾ M_{2A} equals actual tilting moment of the application. See Page 241 for calculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to use a grade 12.9 fastener on all output connections.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.



"PHQA" Series ServoFit® Precision Planetary Gearhead Features

The "PHQA" Series ServoFit Precision Planetary Gearheads is a four-planet system allowing the torque to be distributed over 4 planets instead of 3, resulting in a $\geq 35\%$ increase in output torque and a $\geq 80\%$ increase in torsional rigidity. Precision selection of the gears ensures the lowest backlash possible of ≤ 1 arcminute.

Some other features are:

- Readily Attaches to Any Servo Motor (IEC, NEMA, or Customized Motor Plates*)
- 5 Year Limited Warranty (2 years on bearings, seals, etc.)
- Low Backlash
- High Input Speeds
- Ratios up to 600:1
- Advanced Gear Technology
- Up to 93% Efficiency
- Quiet Running
- Assembled in the U.S.A.



Lubricated for life with high-quality synthetic oil. Input bearing with shields and high temperature grease provide maintenance free operation.

High tensile tempered steel single-piece housing

Ring gear machined integral to the housing — not welded or pressed in — and case-hardened, finish-ground sun and planet gears, provide greater concentricity and eliminates speed fluctuation

The FlexiAdapt® motor coupling is designed for large motor shaft diameters and features a bellows coupling to compensate for thermal expansion of the motor shaft—ensuring long motor life by preventing thrust load on the motor bearings.

Balanced clamp coupling for smooth operation at high speeds.



Oversized, single-piece planet carrier, made of high tensile material, enables use of higher load capacity bearings and provides highest torsional stiffness possible.

FKM seals for the smallest possible diameter—reduces friction and heat buildup, increases efficiency, and allows continuous duty without additional cooling.

Motor plate can easily be changed to fit your choice of motors

The FlexiAdapt® motor shaft adapter system allows easy and accurate installation of motor in minutes — no special tools required.

Adapter bushings to fit all motor shafts — no key required

Motor plate pilot toleranced to fit your motor for precise concentricity



Also available as a right angle drive. Contact STOBER Drives.

PHQA



"PHQA" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio i	Maximum Input Speed		Maximum Motor Shaft øD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin C ₂		Output Torque					
		Continuous RPM (n ₁)	Cyclic RPM (n ₁)			in.lbs.	Nm	Nominal ²⁾		Acceleration		Peak ³⁾	
								M _{2N}	M _{2B}	M _{2B}	M _{2PEAK}		

PHQA722 with Motor Mounting Plate

PHQA722F0220 MF	22.00	3,000	5,000	≤19	6.00	1,794.3	202.6	5,758	650	8,415	950	16,830	1,900
PHQA722F0220 MF	22.00	3,000	5,000	>19≤24	6.07	1,801.9	203.4	5,758	650	8,415	950	16,830	1,900
PHQA722F0220 MF	22.00	3,000	5,000	>24≤32	5.97	1,801.9	203.4	5,758	650	8,415	950	16,830	1,900
PHQA722F0220 MF	22.00	3,000	5,000	>32≤35	5.97	1,801.9	203.4	5,758	650	8,415	950	16,830	1,900
PHQA722F0220 MFL	22.00	3,000	5,000	>32≤38	13.16	1,817.5	205.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MF	27.50	3,500	6,000	≤19	5.52	1,796.0	202.8	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MF	27.50	3,500	6,000	>19≤24	5.60	1,800.8	203.3	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MF	27.50	3,500	6,000	>24≤32	5.50	1,800.8	203.3	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MF	27.50	3,500	6,000	>32≤35	5.50	1,800.8	203.3	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MFL	27.50	3,500	6,000	>32≤38	12.69	1,810.8	204.4	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MF	38.50	3,700	6,500	≤19	5.17	1,781.9	201.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MF	38.50	3,700	6,500	>19≤24	5.17	1,781.9	201.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MF	38.50	3,700	6,500	>24≤32	5.07	1,781.9	201.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MF	38.50	3,700	6,500	>32≤35	5.07	1,781.9	201.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MFL	38.50	3,700	6,500	>32≤38	12.00	1,787.8	201.8	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MF	55.00	3,700	6,500	≤19	4.99	1,724.8	194.7	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MF	55.00	3,700	6,500	>19≤24	4.99	1,724.8	194.7	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MF	55.00	3,700	6,500	>24≤32	4.89	1,724.8	194.7	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MF	55.00	3,700	6,500	>32≤35	4.89	1,724.8	194.7	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MFL	55.00	3,700	6,500	>32≤38	11.82	1,727.5	195.0	5,758	650	8,415	950	16,830	1,900

PHQA

PHQA723 with Motor Mounting Plate *Continued Next Page*

PHQA723F0880 MF	88.00	3,300	6,000	≤14	2.02	1,803.3	203.6	5,758	650	8,415	950	16,830	1,900
PHQA723F0880 MF	88.00	3,300	6,000	>14≤19	2.05	1,804.2	203.7	5,758	650	8,415	950	16,830	1,900
PHQA723F0880 MF	88.00	3,300	6,000	>19≤24	1.95	1,804.2	203.7	5,758	650	8,415	950	16,830	1,900
PHQA723F0880 MFL	88.00	3,300	6,000	>24≤32	5.16	1,805.4	203.8	5,758	650	8,415	950	16,830	1,900
PHQA723F1100 MF	110.0	3,300	6,000	≤14	1.99	1,801.8	203.4	5,758	650	8,415	950	16,830	1,900
PHQA723F1100 MF	110.0	3,300	6,000	>14≤19	2.02	1,802.3	203.5	5,758	650	8,415	950	16,830	1,900
PHQA723F1100 MF	110.0	3,300	6,000	>19≤24	1.92	1,802.3	203.5	5,758	650	8,415	950	16,830	1,900
PHQA723F1100 MFL	110.0	3,300	6,000	>24≤32	5.13	1,803.1	203.6	5,758	650	8,415	950	16,830	1,900
PHQA723F1380 MF	137.5	3,700	6,500	≤14	1.87	1,801.3	203.4	5,758	650	8,415	950	16,830	1,900
PHQA723F1380 MF	137.5	3,700	6,500	>14≤19	1.89	1,801.7	203.4	5,758	650	8,415	950	16,830	1,900
PHQA723F1380 MF	137.5	3,700	6,500	>19≤24	1.79	1,801.7	203.4	5,758	650	8,415	950	16,830	1,900
PHQA723F1380 MFL	137.5	3,700	6,500	>24≤32	5.00	1,802.2	203.5	5,758	650	8,415	950	16,830	1,900
PHQA723F1540 MF	154.0	4,000	7,000	≤14	1.76	1,798.4	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1540 MF	154.0	4,000	7,000	>14≤19	1.76	1,798.4	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1540 MF	154.0	4,000	7,000	>19≤24	1.66	1,798.4	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1540 MFL	154.0	4,000	7,000	>24≤32	4.82	1,798.9	203.1	5,758	650	8,415	950	16,830	1,900
PHQA723F1930 MF	192.5	4,000	7,000	≤14	1.75	1,798.6	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1930 MF	192.5	4,000	7,000	>14≤19	1.75	1,798.6	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1930 MF	192.5	4,000	7,000	>19≤24	1.65	1,798.6	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1930 MFL	192.5	4,000	7,000	>24≤32	4.81	1,799.0	203.1	5,758	650	8,415	950	16,830	1,900

¹⁾ Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.
²⁾ Based on input speed: n₁ = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n₁ = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$
³⁾ Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.



"PHQA" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio i	Maximum Input Speed		Maximum Motor Shaft øD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin C ₂		Output Torque					
		Continuous RPM (n ₁)	Cyclic RPM (n ₁)			in.lbs.	Nm	Nominal ²⁾ M _{2N}		Acceleration M _{2B}		Peak ³⁾ M _{2PEAK}	
								in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm

PHQA723 with Motor Mounting Plate *Continued*

PHQA723F2200 MF	220.0	4,000	7,000	≤14	1.70	1,786.5	201.7	5,758	650	8,415	950	16,830	1,900
PHQA723F2200 MF	220.0	4,000	7,000	>14≤19	1.70	1,786.5	201.7	5,758	650	8,415	950	16,830	1,900
PHQA723F2200 MF	220.0	4,000	7,000	>19≤24	1.60	1,786.5	201.7	5,758	650	8,415	950	16,830	1,900
PHQA723F2200 MFL	220.0	4,000	7,000	>24≤32	4.76	1,786.7	201.7	5,758	650	8,415	950	16,830	1,900
PHQA723F2750 MF	275.0	4,000	7,000	≤14	1.70	1,791.0	202.2	5,758	650	8,415	950	16,830	1,900
PHQA723F2750 MF	275.0	4,000	7,000	>14≤19	1.70	1,791.0	202.2	5,758	650	8,415	950	16,830	1,900
PHQA723F2750 MF	275.0	4,000	7,000	>19≤24	1.60	1,791.0	202.2	5,758	650	8,415	950	16,830	1,900
PHQA723F2750 MFL	275.0	4,000	7,000	>24≤32	4.76	1,791.1	202.2	5,758	650	8,415	950	16,830	1,900
PHQA723F3850 MF	385.0	4,000	7,000	≤14	1.69	1,779.0	200.8	5,758	650	8,415	950	16,830	1,900
PHQA723F3850 MF	385.0	4,000	7,000	>14≤19	1.69	1,779.0	200.8	5,758	650	8,415	950	16,830	1,900
PHQA723F3850 MF	385.0	4,000	7,000	>19≤24	1.59	1,779.0	200.8	5,758	650	8,415	950	16,830	1,900
PHQA723F3850 MFL	385.0	4,000	7,000	>24≤32	4.75	1,779.1	200.8	5,758	650	8,415	950	16,830	1,900
PHQA723F5500 MF	550.0	4,000	7,000	≤14	1.69	1,723.4	194.6	5,758	650	8,415	950	16,830	1,900
PHQA723F5500 MF	550.0	4,000	7,000	>14≤19	1.69	1,723.4	194.6	5,758	650	8,415	950	16,830	1,900
PHQA723F5500 MF	550.0	4,000	7,000	>19≤24	1.59	1,723.4	194.6	5,758	650	8,415	950	16,830	1,900
PHQA723F5500 MFL	550.0	4,000	7,000	>24≤32	4.75	1,723.5	194.6	5,758	650	8,415	950	16,830	1,900

PHQA822 with Motor Mounting Plate

PHQA822F0220 MF	22.00	2,500	4,500	≤24	16.11	5,615.5	633.9	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0220 MF	22.00	2,500	4,500	>24≤32	16.44	5,661.8	639.2	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0220 MF	22.00	2,500	4,500	>32≤38	16.44	5,661.8	639.2	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0220 MFL	22.00	2,500	4,500	>38≤48	18.46	5,749.0	649.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0280 MF	27.50	3,000	5,500	≤24	14.36	5,657.5	638.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0280 MF	27.50	3,000	5,500	>24≤32	14.69	5,687.5	642.1	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0280 MF	27.50	3,000	5,500	>32≤38	14.69	5,687.5	642.1	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0280 MFL	27.50	3,000	5,500	>38≤48	16.71	5,743.5	648.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0390 MF	38.50	3,300	6,000	≤24	12.98	5,619.5	634.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0390 MF	38.50	3,300	6,000	>24≤32	12.98	5,619.5	634.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0390 MF	38.50	3,300	6,000	>32≤38	12.98	5,619.5	634.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0390 MFL	38.50	3,300	6,000	>38≤48	15.35	5,656.7	638.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0550 MF	55.00	3,300	6,000	≤24	12.31	5,413.3	611.1	14,031	1,584	23,031	2,600	38,975	4,400
PHQA822F0550 MF	55.00	3,300	6,000	>24≤32	12.31	5,413.3	611.1	14,031	1,584	23,031	2,600	38,975	4,400
PHQA822F0550 MF	55.00	3,300	6,000	>32≤38	12.31	5,413.3	611.1	14,031	1,584	23,031	2,600	38,975	4,400
PHQA822F0550 MFL	55.00	3,300	6,000	>38≤48	14.68	5,430.1	613.0	14,031	1,584	23,031	2,600	38,975	4,400

PHQA823 with Motor Mounting Plate *Continued Next Page*

PHQA823F0880 MF	88.00	3,000	5,000	≤19	6.12	5,704.6	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F0880 MF	88.00	3,000	5,000	>19≤24	6.19	5,709.4	644.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F0880 MF	88.00	3,000	5,000	>24≤32	6.09	5,709.4	644.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F0880 MF	88.00	3,000	5,000	>32≤35	6.09	5,709.4	644.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F0880 MFL	88.00	3,000	5,000	>32≤38	13.28	5,719.2	645.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1100 MF	110.0	3,500	6,000	≤19	6.01	5,714.2	645.1	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1100 MF	110.0	3,500	6,000	>19≤24	6.08	5,717.2	645.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1100 MF	110.0	3,500	6,000	>24≤32	5.98	5,717.2	645.4	15,059	1,700	23,031	2,600	38,975	4,400

Index of Symbols

MT	Motor adapter with TriAdapt® coupling	n ₁	Maximum input speed RPM	M _{2B}	Acceleration Torque Maximum
MF	Motor adapter with FlexiAdapt® coupling	J ₁	Mass moment of inertia (input)	M _{2PEAK}	Peak Torque
L	Large Input	C ₂	Torsional Stiffness		
i	Ratio - Exact	M _{2N}	Nominal Torque		

P H Q A



"PHQA" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio i	Maximum Input Speed		Maximum Motor Shaft øD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin C ₂		Output Torque					
		Continuous RPM (n ₁)	Cyclic RPM (n ₁)			in.lbs.	Nm	Nominal ²⁾ M _{2N}		Acceleration M _{2B}		Peak ³⁾ M _{2PEAK}	
								in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm

PHQA823 with Motor Mounting Plate *Continued*

PHQA823F1100 MF	110.0	3,500	6,000	>32≤35	5.98	5,717.2	645.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1100 MFL	110.0	3,500	6,000	>32≤38	13.17	5,723.5	646.1	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MF	137.5	3,500	6,000	≤19	5.53	5,711.4	644.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MF	137.5	3,500	6,000	>19≤24	5.60	5,713.4	645.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MF	137.5	3,500	6,000	>24≤32	5.50	5,713.4	645.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MF	137.5	3,500	6,000	>32≤35	5.50	5,713.4	645.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MFL	137.5	3,500	6,000	>32≤38	12.69	5,717.4	645.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MF	154.0	3,700	6,500	≤19	5.21	5,704.8	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MF	154.0	3,700	6,500	>19≤24	5.21	5,704.8	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MF	154.0	3,700	6,500	>24≤32	5.11	5,704.8	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MF	154.0	3,700	6,500	>32≤35	5.11	5,704.8	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MFL	154.0	3,700	6,500	>32≤38	12.04	5,708.6	644.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MF	192.5	3,700	6,500	≤19	5.18	5,707.9	644.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MF	192.5	3,700	6,500	>19≤24	5.18	5,707.9	644.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MF	192.5	3,700	6,500	>24≤32	5.08	5,707.9	644.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MF	192.5	3,700	6,500	>32≤35	5.08	5,707.9	644.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MFL	192.5	3,700	6,500	>32≤38	12.01	5,710.3	644.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MF	220.0	3,700	6,500	≤19	5.01	5,673.8	640.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MF	220.0	3,700	6,500	>19≤24	5.01	5,673.8	640.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MF	220.0	3,700	6,500	>24≤32	4.91	5,673.8	640.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MF	220.0	3,700	6,500	>32≤35	4.91	5,673.8	640.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MFL	220.0	3,700	6,500	>32≤38	11.84	5,675.6	640.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MF	275.0	3,700	6,500	≤19	4.99	5,693.0	642.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MF	275.0	3,700	6,500	>19≤24	4.99	5,693.0	642.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MF	275.0	3,700	6,500	>24≤32	4.89	5,693.0	642.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MF	275.0	3,700	6,500	>32≤35	4.89	5,693.0	642.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MFL	275.0	3,700	6,500	>32≤38	11.82	5,694.2	642.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MF	385.0	3,700	6,500	≤19	4.98	5,623.5	634.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MF	385.0	3,700	6,500	>19≤24	4.98	5,623.5	634.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MF	385.0	3,700	6,500	>24≤32	4.88	5,623.5	634.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MF	385.0	3,700	6,500	>32≤35	4.88	5,623.5	634.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MFL	385.0	3,700	6,500	>32≤38	11.80	5,624.1	634.9	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F5500 MF	550.0	3,700	6,500	≤19	4.97	5,411.6	610.9	14,031	1,584	23,031	2,600	38,975	4,400
PHQA823F5500 MF	550.0	3,700	6,500	>19≤24	4.97	5,411.6	610.9	14,031	1,584	23,031	2,600	38,975	4,400
PHQA823F5500 MF	550.0	3,700	6,500	>24≤32	4.87	5,411.6	610.9	14,031	1,584	23,031	2,600	38,975	4,400
PHQA823F5500 MF	550.0	3,700	6,500	>32≤35	4.87	5,411.6	610.9	14,031	1,584	23,031	2,600	38,975	4,400
PHQA823F5500 MFL	550.0	3,700	6,500	>32≤38	11.80	5,411.9	611.0	14,031	1,584	23,031	2,600	38,975	4,400

PHQA

¹⁾ Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

²⁾ Based on input speed: n₁ = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n₁ = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

³⁾ Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.



"PHQA" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio i	Maximum Input Speed		Maximum Motor Shaft øD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin C ₂		Output Torque					
		Continuous RPM (n ₁)	Cyclic RPM (n ₁)			Nominal ²⁾ M _{2N}		Acceleration M _{2B}		Peak ³⁾ M _{2PEAK}			
						in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm		

PHQA932 with Motor Mounting Plate

PHQA932F0180 MF	18.00	1,800	3,000	≤32	78.11	10,334.8	1,166.7	33,660	3,800	53,148	6,000	75,179	8,487
PHQA932F0180 MF	18.00	1,800	3,000	>32≤38	77.88	10,423.3	1,176.7	33,660	3,800	53,148	6,000	89,266	10,077
PHQA932F0180 MF	18.00	1,800	3,000	>38≤48	77.25	10,423.3	1,176.7	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0240 MF	24.00	2,200	3,500	≤32	49.34	10,496.9	1,185.0	33,660	3,800	53,148	6,000	100,239	11,316
PHQA932F0240 MF	24.00	2,200	3,500	>32≤38	49.12	10,548.1	1,190.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0240 MF	24.00	2,200	3,500	>38≤48	48.48	10,548.1	1,190.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0300 MF	30.00	2,500	4,000	≤32	42.43	10,527.5	1,188.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0300 MF	30.00	2,500	4,000	>32≤38	42.20	10,560.4	1,192.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0300 MF	30.00	2,500	4,000	>38≤48	41.57	10,560.4	1,192.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0420 MF	42.00	2,800	4,500	≤32	37.04	10,468.4	1,181.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0420 MF	42.00	2,800	4,500	>32≤38	36.84	10,468.4	1,181.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0420 MF	42.00	2,800	4,500	>38≤48	36.20	10,468.4	1,181.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0600 MF	60.00	2,800	4,500	≤32	34.33	10,129.5	1,143.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0600 MF	60.00	2,800	4,500	>32≤38	34.12	10,129.5	1,143.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0600 MF	60.00	2,800	4,500	>38≤48	33.49	10,129.5	1,143.5	33,660	3,800	53,148	6,000	106,296	12,000

PHQA933 with Motor Mounting Plate Continued Next Page

PHQA933F0720 MF	72.00	2,200	4,500	≤24	18.15	10,599.6	1,196.6	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0720 MF	72.00	2,200	4,500	>24≤32	18.49	10,614.9	1,198.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0720 MF	72.00	2,200	4,500	>32≤38	18.49	10,614.9	1,198.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0720 MFL	72.00	2,200	4,500	>38≤48	20.50	10,643.2	1,201.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0960 MF	96.00	2,500	4,500	≤24	16.35	10,649.0	1,202.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0960 MF	96.00	2,500	4,500	>24≤32	16.69	10,657.6	1,203.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0960 MF	96.00	2,500	4,500	>32≤38	16.69	10,657.6	1,203.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0960 MFL	96.00	2,500	4,500	>38≤48	18.70	10,673.7	1,205.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1200 MF	120.0	2,500	4,500	≤24	15.92	10,624.8	1,199.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1200 MF	120.0	2,500	4,500	>24≤32	16.26	10,630.4	1,200.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1200 MF	120.0	2,500	4,500	>32≤38	16.26	10,630.4	1,200.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1200 MFL	120.0	2,500	4,500	>38≤48	18.27	10,640.5	1,201.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1500 MF	150.0	3,000	5,500	≤24	14.24	10,628.8	1,199.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1500 MF	150.0	3,000	5,500	>24≤32	14.58	10,632.3	1,200.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1500 MF	150.0	3,000	5,500	>32≤38	14.58	10,632.3	1,200.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1500 MFL	150.0	3,000	5,500	>38≤48	16.59	10,638.8	1,201.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1680 MF	168.0	3,300	6,000	≤24	13.06	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1680 MF	168.0	3,300	6,000	>24≤32	13.06	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1680 MF	168.0	3,300	6,000	>32≤38	13.06	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1680 MFL	168.0	3,300	6,000	>38≤48	15.43	10,653.4	1,202.7	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2100 MF	210.0	3,300	6,000	≤24	12.92	10,623.2	1,199.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2100 MF	210.0	3,300	6,000	>24≤32	12.92	10,623.2	1,199.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2100 MF	210.0	3,300	6,000	>32≤38	12.92	10,623.2	1,199.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2100 MFL	210.0	3,300	6,000	>38≤48	15.29	10,627.7	1,199.8	33,660	3,800	53,148	6,000	106,296	12,000

PHQA

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MT Motor adapter with TriAdapt® coupling	n ₁ Maximum input speed RPM	M _{2B} Acceleration Torque Maximum
MF Motor adapter with FlexiAdapt® coupling	J ₁ Mass moment of inertia (input)	M _{2PEAK} Peak Torque
L Large Input	C ₂ Torsional Stiffness	
i Ratio - Exact	M _{2N} Nominal Torque	



"PHQA" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio i	Maximum Input Speed		Maximum Motor Shaft ØD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin C ₂		Output Torque					
		Continuous RPM (n ₁)	Cyclic RPM (n ₁)			in.lbs.	Nm	Nominal ²⁾ M _{2N}		Acceleration M _{2B}		Peak ³⁾ M _{2PEAK}	
								in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm

PHQA933 with Motor Mounting Plate *Continued*

PHQA933F2400 MF	240.0	3,300	6,000	≤24	12.35	10,600.9	1,196.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2400 MF	240.0	3,300	6,000	>24≤32	12.35	10,600.9	1,196.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2400 MF	240.0	3,300	6,000	>32≤38	12.35	10,600.9	1,196.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2400 MFL	240.0	3,300	6,000	>38≤48	14.72	10,604.3	1,197.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F3000 MF	300.0	3,300	6,000	≤24	12.28	10,594.2	1,196.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F3000 MF	300.0	3,300	6,000	>24≤32	12.28	10,594.2	1,196.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F3000 MF	300.0	3,300	6,000	>32≤38	12.28	10,594.2	1,196.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F3000 MFL	300.0	3,300	6,000	>38≤48	14.65	10,596.3	1,196.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F4200 MF	420.0	3,300	6,000	≤24	12.22	10,485.8	1,183.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F4200 MF	420.0	3,300	6,000	>24≤32	12.22	10,485.8	1,183.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F4200 MF	420.0	3,300	6,000	>32≤38	12.22	10,485.8	1,183.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F4200 MFL	420.0	3,300	6,000	>38≤48	14.59	10,486.8	1,183.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F6000 MF	600.0	3,300	6,000	≤24	12.20	10,137.5	1,144.4	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F6000 MF	600.0	3,300	6,000	>24≤32	12.20	10,137.5	1,144.4	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F6000 MF	600.0	3,300	6,000	>32≤38	12.20	10,137.5	1,144.4	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F6000 MFL	600.0	3,300	6,000	>38≤48	14.57	10,138.0	1,144.5	33,660	3,800	53,148	6,000	106,296	12,000

PHQA1032 with Motor Mounting Plate

PHQA1032F0240 MT	24.00	2,000	3,000	≤48	90.76	18,268.8	2,062.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0240 MT	24.00	2,000	3,000	>48≤55	100.40	18,268.8	2,062.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0240 MT	24.00	2,000	3,000	>55≤60	95.79	18,268.8	2,062.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0300 MT	30.00	2,200	3,500	≤48	72.20	18,232.6	2,058.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0300 MT	30.00	2,200	3,500	>48≤55	81.84	18,232.6	2,058.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0300 MT	30.00	2,200	3,500	>55≤60	77.22	18,232.6	2,058.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0420 MT	42.00	2,500	4,000	≤48	57.46	18,070.9	2,040.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0420 MT	42.00	2,500	4,000	>48≤55	67.10	18,070.9	2,040.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0420 MT	42.00	2,500	4,000	>55≤60	62.49	18,070.9	2,040.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0600 MT	60.00	2,500	4,000	≤48	50.14	17,454.4	1,970.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0600 MT	60.00	2,500	4,000	>48≤55	59.78	17,454.4	1,970.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0600 MT	60.00	2,500	4,000	>55≤60	55.17	17,454.4	1,970.5	57,577	6,500	88,580	10,000	177,160	20,000

¹⁾ Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

²⁾ Based on input speed: n₁ = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n₁ = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

³⁾ Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.



"PHQA" Series ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio i	Maximum Input Speed		Maximum Motor Shaft øD ⁶ mm	Input ¹⁾ Inertia J ₁ kgcm ²	Torsional Stiffness per arcmin C ₂		Output Torque					
		Continuous RPM (n ₁)	Cyclic RPM (n ₂)			Nominal ²⁾ M _{2N}		Acceleration M _{2B}		Peak ³⁾ M _{2PEAK}			
						in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm		

PHQA1033 with Motor Mounting Plate

PHQA1033F0960 MT	96.00	2,200	3,500	≤32	28.33	18,255.3	2,060.9	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F0960 MT	96.00	2,200	3,500	>32≤38	32.26	18,265.0	2,062.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F0960 MT	96.00	2,200	3,500	>38≤48	36.00	18,265.0	2,062.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F0960 MTL	96.00	2,200	3,500	>48≤55	71.29	18,305.1	2,066.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F0960 MTL	96.00	2,200	3,500	>55≤60	66.68	18,305.1	2,066.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MT	120.0	2,200	3,500	≤32	27.17	18,224.0	2,057.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MT	120.0	2,200	3,500	>32≤38	31.10	18,230.1	2,058.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MT	120.0	2,200	3,500	>38≤48	34.84	18,230.1	2,058.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MTL	120.0	2,200	3,500	>48≤55	70.13	18,255.7	2,060.9	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MTL	120.0	2,200	3,500	>55≤60	65.52	18,255.7	2,060.9	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MT	150.0	2,500	4,000	≤32	20.24	18,227.6	2,057.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MT	150.0	2,500	4,000	>32≤38	24.17	18,231.6	2,058.2	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MT	150.0	2,500	4,000	>38≤48	27.90	18,231.6	2,058.2	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MTL	150.0	2,500	4,000	>48≤55	63.20	18,247.9	2,060.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MTL	150.0	2,500	4,000	>55≤60	58.59	18,247.9	2,060.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1680 MT	168.0	2,800	4,500	≤32	15.23	18,261.3	2,061.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1680 MT	168.0	2,800	4,500	>32≤38	17.50	18,261.3	2,061.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1680 MT	168.0	2,800	4,500	>38≤48	20.79	18,261.3	2,061.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1680 MTL	168.0	2,800	4,500	>48≤55	58.19	18,277.6	2,063.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2100 MT	210.0	2,800	4,500	≤32	14.85	18,227.8	2,057.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2100 MT	210.0	2,800	4,500	>32≤38	17.12	18,227.8	2,057.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2100 MT	210.0	2,800	4,500	>38≤48	20.41	18,227.8	2,057.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2100 MTL	210.0	2,800	4,500	>48≤55	57.81	18,238.2	2,059.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2400 MT	240.0	2,800	4,500	≤32	12.32	18,201.3	2,054.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2400 MT	240.0	2,800	4,500	>32≤38	14.59	18,201.3	2,054.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2400 MT	240.0	2,800	4,500	>38≤48	17.87	18,201.3	2,054.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2400 MTL	240.0	2,800	4,500	>48≤55	55.28	18,209.2	2,055.7	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F3000 MT	300.0	2,800	4,500	≤32	12.13	18,189.5	2,053.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F3000 MT	300.0	2,800	4,500	>32≤38	14.40	18,189.5	2,053.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F3000 MT	300.0	2,800	4,500	>38≤48	17.69	18,189.5	2,053.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F3000 MTL	300.0	2,800	4,500	>48≤55	55.09	18,194.5	2,054.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F4200 MT	420.0	2,800	4,500	≤32	11.99	18,035.2	2,036.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F4200 MT	420.0	2,800	4,500	>32≤38	14.25	18,035.2	2,036.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F4200 MT	420.0	2,800	4,500	>38≤48	17.54	18,035.2	2,036.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F4200 MTL	420.0	2,800	4,500	>48≤55	54.95	18,037.7	2,036.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F6000 MT	600.0	2,800	4,500	≤32	11.91	17,438.0	1,968.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F6000 MT	600.0	2,800	4,500	>32≤38	14.18	17,438.0	1,968.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F6000 MT	600.0	2,800	4,500	>38≤48	17.47	17,438.0	1,968.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F6000 MTL	600.0	2,800	4,500	>48≤55	54.87	17,439.2	1,968.7	57,577	6,500	88,580	10,000	177,160	20,000

PHQA

Index of Symbols

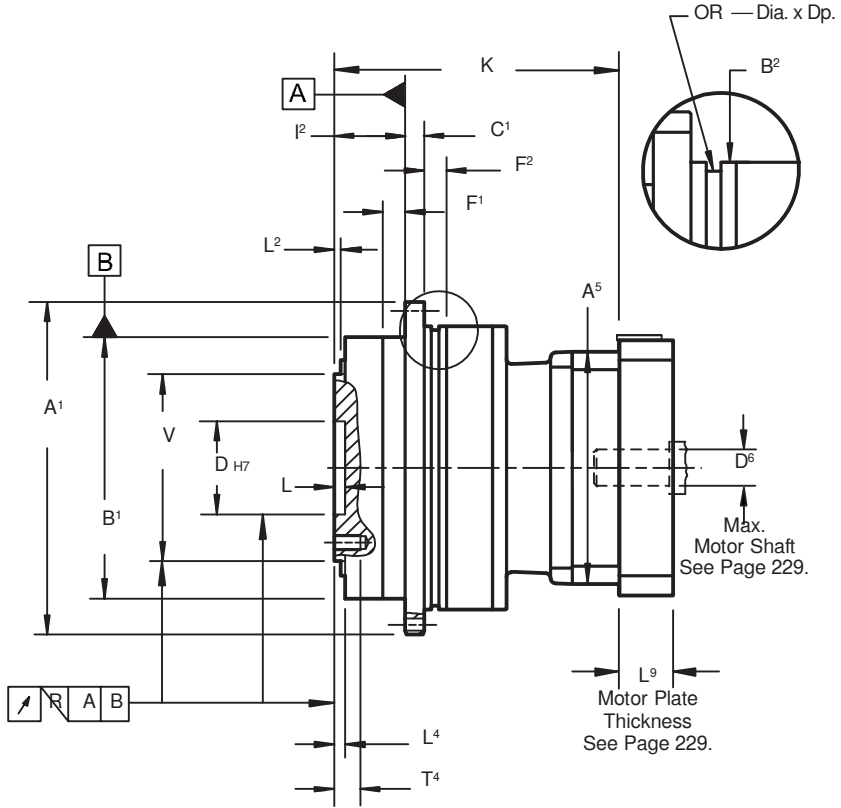
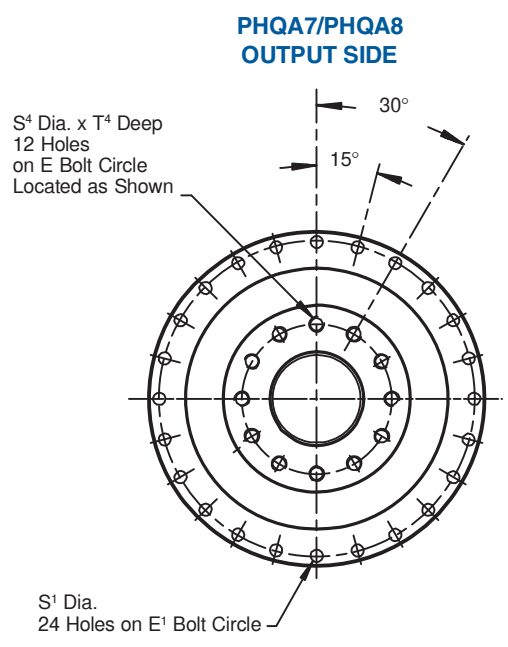
MT Motor adapter with TriAdapt® coupling	n ₁ Maximum input speed RPM	M _{2B} Acceleration Torque Maximum
MF Motor adapter with FlexiAdapt® coupling	J ₁ Mass moment of inertia (input)	M _{2PEAK} Peak Torque
L Large Input	C ₂ Torsional Stiffness	
i Ratio - Exact	M _{2N} Nominal Torque	



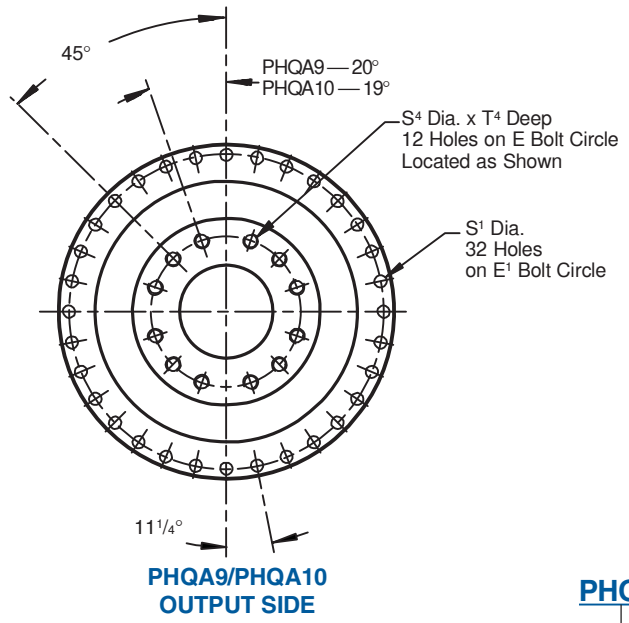
"PHQA" Series ServoFit® Precision Planetary Gearhead Dimensional Data



Drawing for Units
PHQA722 thru PHQA1033



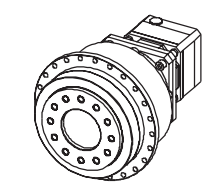
PHQA



If a planetary gearhead is to be mounted from "B2" side, specify when ordering. For proper mounting the paint must be eliminated and the tolerance held on that surface.



Side "B2" mounting is not possible with the Large Input.



Typical 3 Stage Configuration

Part No.	Explanation
PHQA 8 2 2 F 0050 MF L	
PHQA	"PHQA" Series Quattro Power ServoFit Precision Planetary Gearhead
8	Unit No.
2	Generation No.
2	No. of Stages (2 = 2 Stage, 3 = 3 Stage)
F	Output Flange
0050	Ratio (0050 = 5.0:1)
MF	Motor Plate with FlexiAdapt Coupling (PHQA10 uses the MT adapter)
L	Large Input Option

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)



"PHQA" Series ServoFit® Precision Planetary Gearhead Dimensional Data



Table No. 1 "PHQA" Series – Gearhead with Motor Plate – Dimensions (mm/inches)

Unit	A ¹ h7	B ¹ h7	B ² h7	C ¹	D H7	E	E ¹	F ¹	F ²	I ²	L	L ²	L ⁴	OR
PHQA722/PHQA723	179 +.000/-0.040 7.047 +.0000/-0.0016	140 +.000/-0.040 5.513 +.0000/-0.0016	152 +.000/-0.040 5.984 +.0000/-0.0016	10 .39	50 +.025/-0 1.969 +.0010/-0.0000	80 3.15	168 6.61	12 .47	12 .47	38 1.50	6 .24	6 .24	6 .24	145x3 5.71x.12
PHQA822/PHQA823	247 +.000/-0.046 9.724 +.0000/-0.0018	200 +.000/-0.046 7.874 +.0000/-0.0018	212 +.000/-0.046 8.346 +.0000/-0.0018	12 .47	80 +.030/-0 3.150 +.0012/-0.0000	125 4.92	233 9.17	15 .59	15 .59	50 1.97	8 .31	8 .31	8.5 .33	200x5 7.87x.20
PHQA932/PHQA933	300 — 11.811 10.039	255 +.000/-0.052 10.039 +.000/-0.0020	255 +.000/-0.052 10.039 +.000/-0.0020	18 .71	90 +.035/-0 3.543 +.0014/-0.0000	145 5.71	280 11.02	20 .79	33 1.29	66 2.60	12 .47	11 .43	12 .47	238x5 9.37x.20
PHQA1032/PHQA1033	330 — 12.992 11.220	285 +.000/-0.057 11.221 +.000/-0.0022	285 +.000/-0.052 11.221 +.000/-0.0020	20 .79	95 +.035/-0 3.740 +.0014/-0.0000	166 6.53	310 12.20	20 .79	20 .79	75 2.95	10 .39	15 .59	15 .59	270x6 10.63x.24

Table No. 2 "PHQA" Series – Dimensions (mm/inches)

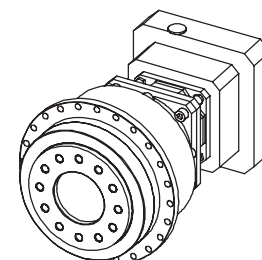
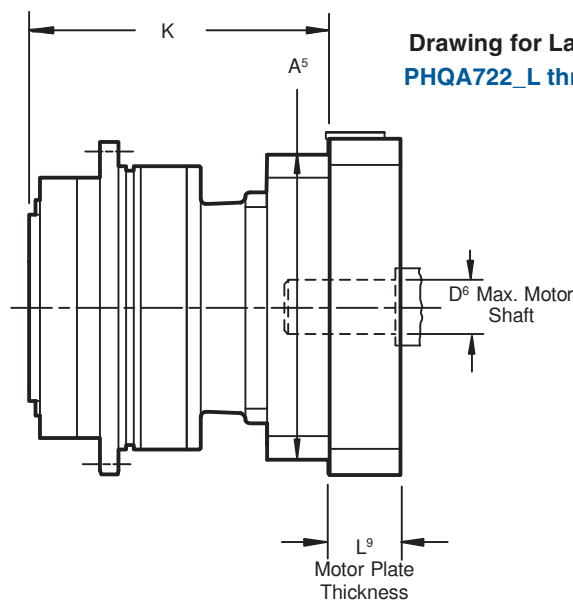
Unit	R	S ¹	S ² H7	S ⁴	T ⁴	V h7
PHQA722/PHQA723	.025 .0010	6.6 .26	8 +.015/-0.000 .315 +.0006/-0.0000	M10	16 .63	100 +.000/-0.035 3.937 +.000/-0.0014
PHQA822/PHQA823	.030 .0012	9 .35	10 +.015/-0.000 .393 +.0006/-0.0000	M12	17 .67	160 +.000/-0.040 6.299 +.000/-0.0016
PHQA932/PHQA933	.030 .0012	13.5 .53	—	M20	28 1.10	180 +.000/-0.040 7.087 +.000/-0.0016
PHQA1032/PHQA1033	.040 ⁽¹⁾ .0016	13.5 .53	—	M24	35 1.38	200 +.000/-0.046 7.874 +.000/-0.0018

⁽¹⁾ "R" is .030 (.0012) for PHQA1033

Table No. 3 "PHQA" Series – Dimensions (mm/inches)

Unit	A ⁵		K—Standard		Unit	A ⁵		K—Large Input	
	mm	inches	mm	inches		mm	inches	mm	inches
PHQA722	115	4.53	190	7.48	PHQA722_L	145	5.71	204	8.03
PHQA723	100	3.94	236.5	9.31	PHQA723_L	115	4.53	248	9.76
PHQA822	145	5.71	251	9.88	PHQA822_L	190	7.48	268	10.55
PHQA823	115	4.53	303	11.93	PHQA823_L	145	5.71	204	8.03
PHQA932	190	7.48	349.5	13.74	PHQA932_L	225	8.85	357.5	14.07
PHQA933	145	5.71	417	16.42	PHQA933_L	190	7.48	434	17.08
PHQA1032	225	8.85	415	16.34	—	—	—	—	—
PHQA1033	190	7.48	503	19.80	PHQA1033_L	225	8.85	511	20.12

PHQA



Typical Large Input Configuration

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)