



## Servo Gear Units

***Geared to a higher  
standard™***

**In-Position  
Technologies**

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**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.

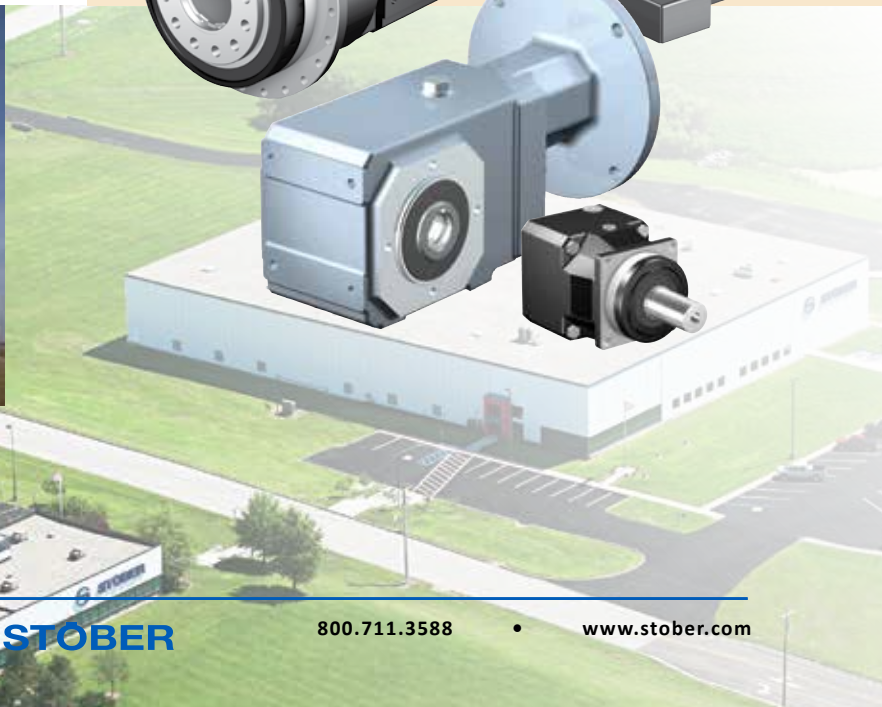
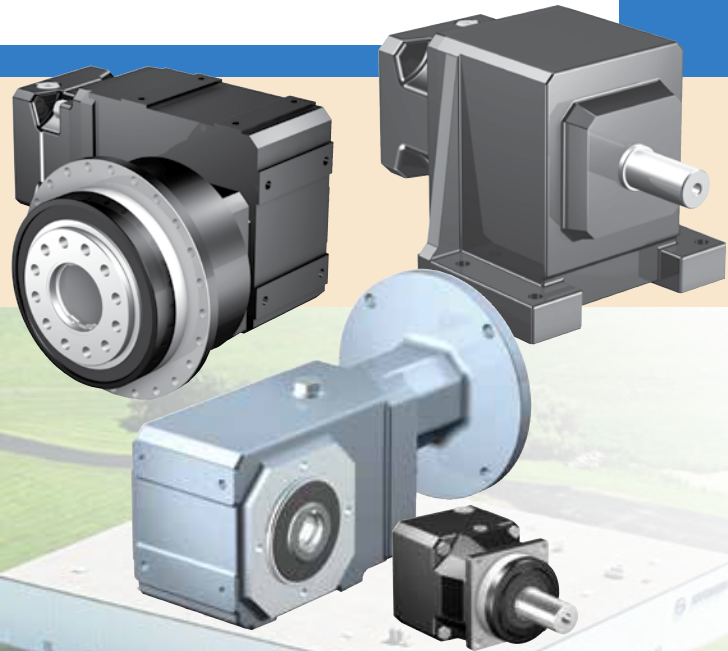
This 80 year heritage has given us expertise in servo gearing for which STOBBER is recognized worldwide as the “gold standard.” STOBBER products are of the highest quality and use only the best components.

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.*



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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.

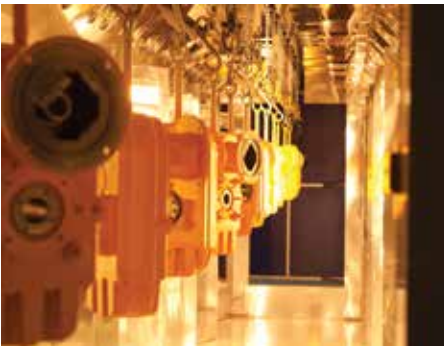
All reducer components (gears, covers, material, etc.) are backed by a five year warranty. Normal wear items (oil seals, bearings, etc.) are covered for two years.

**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](mailto: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



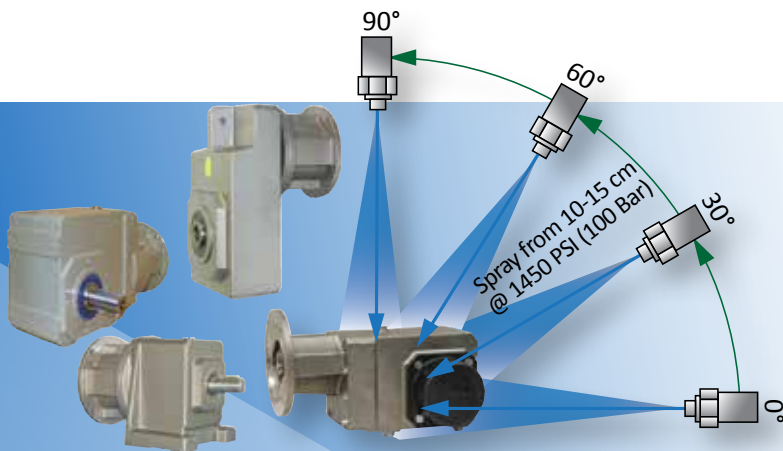
Servo gearheads with the air cooled ServoCool® option reduces the operating temperature 22°C (increases the ambient temperature limit 22°C), increases the output speed 54% and improves the servo motor rating 25%.

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

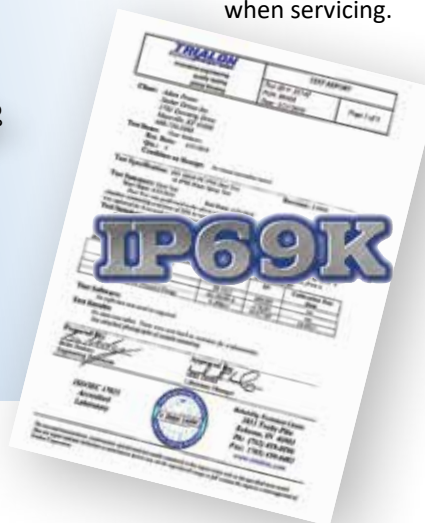
## Spiral Groove Hollow Bore

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.

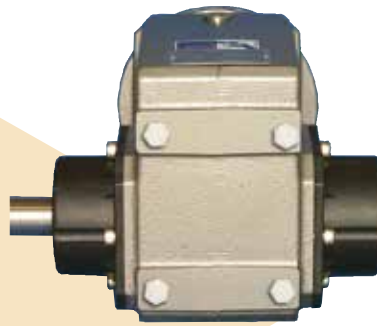


## Wobble Free Bushing

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.

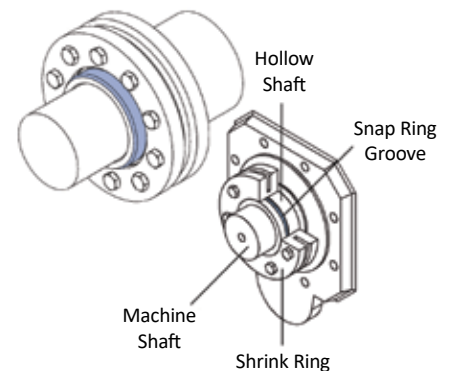
The double sided bushing is not installed into the unit at assembly, but with easy-to-follow installation instructions, the unit and bushing can be mounted on the machinery quickly – without any special tools.

### 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.

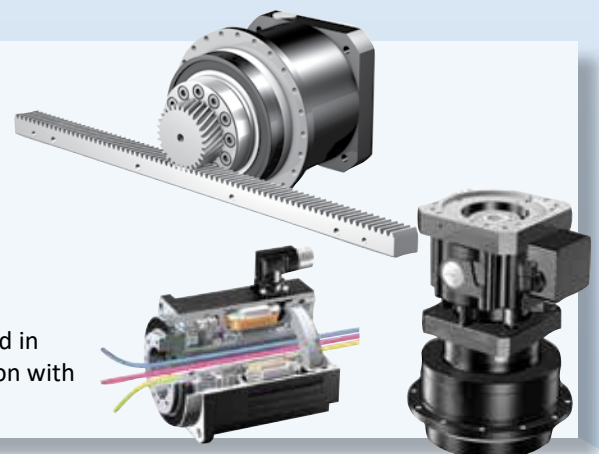
Gear units supplied with a shrink ring, are shipped with the ring installed on the hollow shaft end, ready for assembly.

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

**EZ Series Servo Motors** available to fit all Servo gearheads

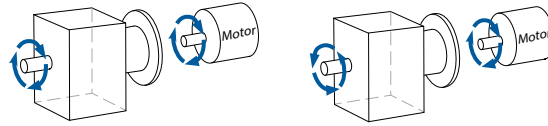
**Rack and Pinion** Servo gearhead systems are a ready to install engineered solution for precision automation applications requiring forces up to 122 kN (27,400 lbs.) with linear backlash as low as 7 µm

**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

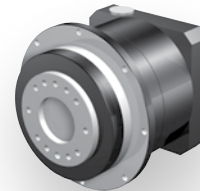
## Inline & Offset Inline Gearheads



### P/PA — Shaft Output \*

STOB 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.

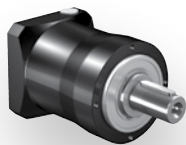
- 3:1 to 100:1
- Up to 2,000 Nm torque (nom)
- Up to 8,000 RPM input speed
- Backlash: P: <3 arc min; PA: <1 arc min



### PH/PHA/PHQ/PHQA — Flange Output\*

STOB 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.

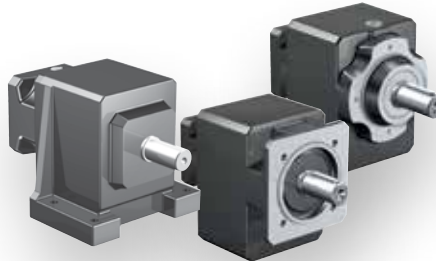
- 4:1 to 600:1
- Up to 13,000 Nm torque (nom)
- Up to 8,000 RPM input speed
- Backlash: PH/PHQ: <3 arc min; PHA/PHQA: <1 arc min



### PE — Shaft Output\*

STOB 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 STOB 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\*

STOB 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\*

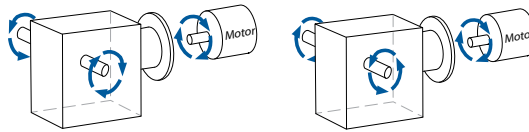
STOB F Series gear drives are a popular choice for applications that require high performance, efficiency, durability, and flexibility. F Series are available with a wide selection of configurations to match almost any mounting requirement.

- 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



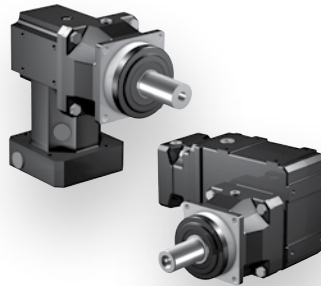
*Many right angle gearheads offer output on either or both sides*



### K – Versatile Outputs\*

STOBBER 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.

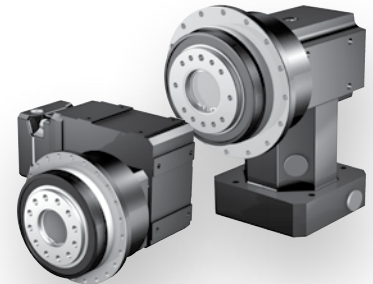
- 4:1 to 381:1
- Up to 12,000 Nm torque (nom)
- Up to 7,000 RPM input speed
- Backlash <10 arc min



### PKX/PK – Shaft Output\*

STOBBER 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\*

STOBBER 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.

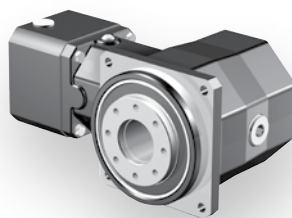
- 4:1 to 591:1
- Torque: 13,000 Nm (nom)
- Up to 7,000 RPM input speed
- Backlash <3.5 arc min



### KL – Versatile Outputs\*

The STOBBER 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\*

STOBBER 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\*

STOBBER 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.

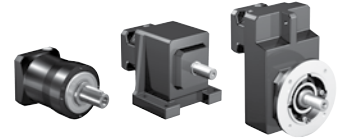
- 4:1 to 70:1
- Up to 346 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: < 10 arc min

# 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
<b>Input</b>	Large Input	•	•	•	•	•	•	•		
	ServoCool	•	•	•	•					
	Solid Shaft	•	•					•	•	•
<b>Output</b> <small>(see page 326 for details)</small>	Hollow Bore									•
	Rotating Flange			•	•	•	•		•	•
	Shrink Ring									•
	Single Bushing									•
	Double Bushing									•
<b>Housing</b>	Flange								•	•
	Foot Mount								•	•
	Tapped Holes								•	•
<b>Protection</b>	IP65	•	•	•	•	•	•	IP64	•	•
	IP69K Washdown								Opt	Opt
	ATEX Certified	Opt	Opt	Opt	Opt	Opt	Opt		Opt	Opt
<b>Paint/Coatings</b>	304SS Housing									
	Standard Black	•	•	•	•	•	•	•	•	•
	Food Duty Corrosion Resistant Duty	•							•	•
<b>Added Functionality</b>	ServoStop*	•	•	•	•				•	•
	Rack and Pinion*	•	•	•				•		
<b>Performance</b> <small>+ Good +++ Better +++++ Best</small>	Continuous RPM	+++	+++	++	++	++	++	+++	+++	++
	Stiffness	+++	+++	++	++++	+++++	+++++	+	+	++++
	Torque Density	+++	+++	++	++++	+++++	+++++	+	+	++++
<b>Precision</b> <small>ArcMin Backlash</small>	1	•		Opt		Opt				
	1-3			•		•			•	
	3-5				•					
	5-10						Opt			Opt
	10-15		•				•			•
	15-20							•		
<b>Nominal Output Torque Ranges</b> <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
								•	
	•	•	•	•				•	•
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	•				•		•		

# Servo Gear Units Application-Tailored Solutions

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

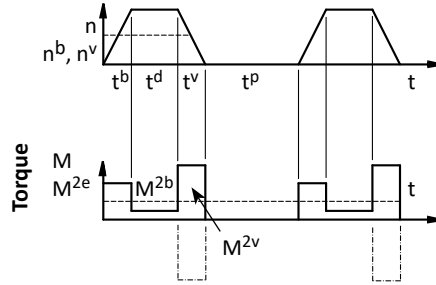
# Gearhead Sizing to your Specific Application Requirements

## 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.

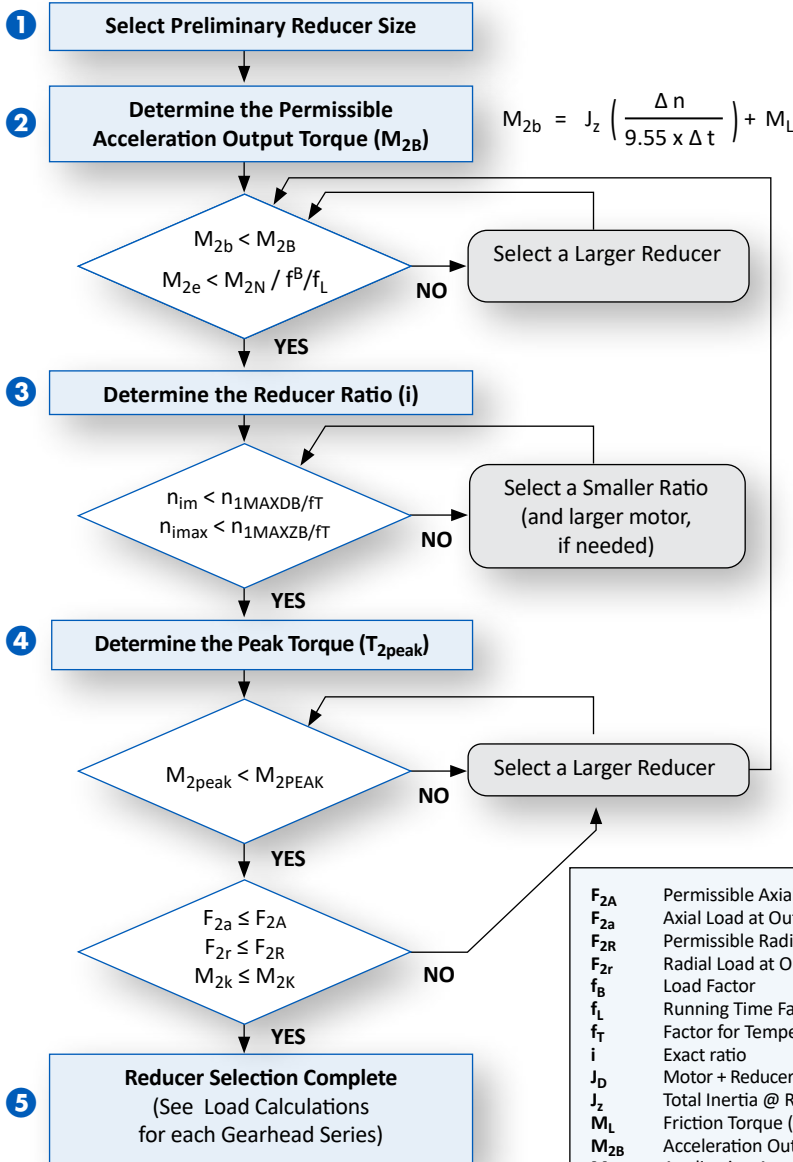
**Cyclic Duty:** Drive will cycle on and off.

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:

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



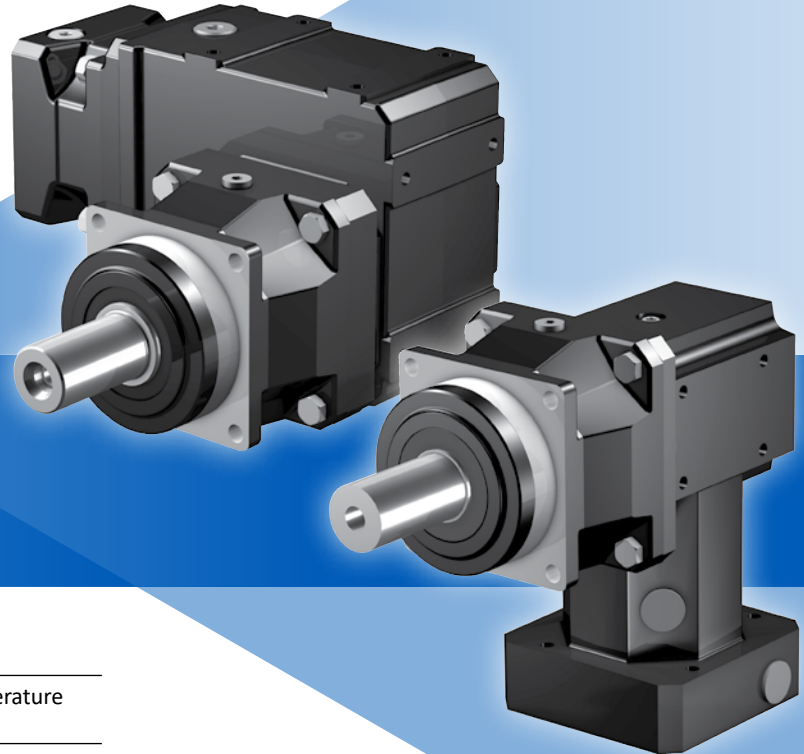
$F_{2A}$	Permissible Axial Load	$M_{2K}$	Rated Tilting Torque
$F_{2a}$	Axial Load at Output Shaft	$M_{2k}$	Equivalent Tilting Load
$F_{2R}$	Permissible Radial load	$M_{2N}$	Nominal Output Torque
$F_{2r}$	Radial Load at Output Shaft	$M_{2peak}$	Peak Output Torque
$f_B$	Load Factor	$n_{1db}$	Maximum Continuous 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)		

# PKX/PK Series: RIGHT ANGLE – Shaft Output

## Features

- 4:1 to 561:1 ratios (higher ratios available. Contact STÖBER.)
- Quiet running (<63dB(A))
- Bearing options to suit your application needs, extending gearbox life and avoiding oversizing, (see page 221).
- 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 PKX provides a right angle option with planetary gearing while the PK Series provides both planetary and helical gearing. The PK provides a more compact, precise solution and can handle higher input speeds. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.*



**SHIPS in 1 DAY!**  
NO EXPEDITE FEE FOR 24 HOUR SERVICE

## General Specifications

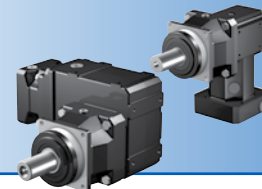
<b>Ambient Temperature</b>	0°C to +40°C (104°F) [Unit temperature <90°C Max]
<b>Backlash</b>	PKX ≤4 arcmins, PK ≤3.5 (see performance overview chart, page 216)
<b>Coating</b>	Standard Black (RAL 790-4), Corrosion Resistant option, Food option
<b>Degree of Protection</b>	IP65
<b>Direction of Rotation</b>	PK: Input and output rotate the SAME direction; PKX 1 stage size 7-8, 2 stage size 8-9; opposite: PKX 1 stage size 2-5; 2 stage size 2-5, 7) (see page 218)
<b>Efficiency</b>	PKX 1 stage 96%, 2 stage 94%; PK 94%
<b>Input RPM</b>	Up to 6,000 RPM
<b>Installation</b>	Requires 10.9 fasteners. See page 328, for more information
<b>Lubrication</b>	Lubricated for life – standard Mobil SHC629; option food grade Mobil SHC CIBUS 150
<b>Mounting Position</b>	Must be specified, see page 218
<b>Warranty</b>	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)

### Benefits of NEW ME Motor Adapters

- Higher torques
- Higher input speeds
- More compact with square coupling housing
- More clamp ring options, so less need for adapter bushings
- Clamp ring with roll pin

## Comparative Advantages

	PKX	PK
Precision	Best	Better
Stiffness	Best	Better
Compact design	Best	Better
Quiet running	Better	Best
Higher ratios	Better	Best
Higher input speeds	Better	Best






# Overview

## Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the PKX/PK 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.

<b>Part Number Examples:</b>	<b>PKX</b>	<b>① P</b>	<b>② 2</b>	<b>③ 2</b>	<b>④ 1</b>	<b>⑤ S</b>	<b>⑥ P</b>	<b>⑦ D</b>	<b>⑧ 0040</b>	<b>⑨ KX301VF</b>	<b>⑩ 0010</b>	<b>⑪ MF</b>	<b>⑫ F</b>	<b>EL1 *</b>
	<b>PK</b>	<b>P</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>S</b>	<b>P</b>	<b>D</b>	<b>0030</b>	<b>K102VF</b>	<b>0040</b>	<b>ME10</b>	<b>F</b>	<b>EL1 *</b>

Design Option	Part Number Code	Description
① <b>Series</b>	<b>P</b>	Planetary
② <b>Size</b>	<b>2 3 4</b> <b>5 7 8 9</b>	7 sizes of gearhead (size 2 - 4 available for PKX Series only)
③ <b>Generation</b>	<b>2</b>	Version of gearhead
④ <b># of Stages</b>	<b>1</b> <b>2</b>	One stage for ratios of ≤ 10:1 Two stage for ratios >10:1
⑤ <b>Housing</b>	<b>S</b>	Standard mounting style
⑥ <b>Output Shaft</b>	<b>P</b> <b>G</b>	Shaft with key Plain shaft (no key)
⑦ <b>Bearing Options</b>	 <b>R</b>	Ball bearing
	 <b>D</b>	Double row angular contact bearing (except size P2)
	 <b>Z</b>	Cylindrical roller bearing (except size P2)
⑧ <b>Ratio</b>	<b>0030</b>	Ratios range from 4:1 to 100:1 for PKX and from 3:1 to 100:1 for PK Series (0030=3:1; 0160=16:1; 1000=100:1, etc.)
⑨ <b>Secondary Unit</b>	<b>KX301VF</b> <b>K102VF</b>	KX Series right angle unit: 5 sizes, 1 stage, with output shaft (V) & flange (F); K Series helical/bevel unit: 4 sizes, 2 stages, with output shaft (V) & flange (F) — please specify side 3 or side 4 (see page 218 for more information)
⑩ <b>Secondary Unit Ratio</b>	<b>0010</b>	KX Series: Ratios from 1:1 to 3:1; K Series: Ratios from 4:1 to 69:1 (0010=1:1; 0020=2:1; 0030=3:1)
⑪ <b>Motor Adapter</b>	<b>MF</b> <b>ME10 – ME40</b>	MF input for PKX Series ME 4 input sizes for PK Series (see also motor mounting plate option, page 221)
⑫ <b>Special Options</b>	<b>F</b>	Food Duty (PKX size P3 thru P5; PK size P5 only)
* <b>Mounting Position</b>	<b>EL1 EL2 EL3 EL4</b> <b>EL5 EL6</b>	Required special instruction for all units, see page 218

PKX/PK Series: RIGHT ANGLE – Shaft Output

### Special Options

#### ATEX — PKX Series only

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

#### Coating Options

- Standard: For dry areas and normal conditions. All units standard coating, unless ordered with Food Duty
- Food Duty: Able to withstand severe wet areas and washdown application (PKX size P3 thru P5; PK size P5 only)
- PKX/PK Series are also available with a multi-layer, industrial 316 stainless steel epoxy coating (contact factory)

#### ME Adapter Options — PK Series only (Contact factory)

- MSS1 special input seal for longer life
- Peak Torque Booster – pinion securing element for shock loads, increasing peak torque up to 80%

# PKX/PK Series: RIGHT ANGLE – Shaft Output

## PKX Series Performance Overview

PKX 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/Generation/# of Stages		P221	P222	P321	P322	P421	P422	P521	P522	P721	P722	P821	P822	P922
Secondary Unit		KX3	KX3	KX3	KX3	KX4	KX3	KX5	KX4	KX7	KX5	KX8	KX7	KX8
Acceleration Torque $M_{2BMAX}$	Nm	22		65		120		300		700		1600		3000
Output Torque Nom. <sup>1)</sup> $M_{2N}$	Nm	16		45		85		210		440		1000		2000
Torsional Stiffness $C_2$	Nm/arcmin	1.9		5		11		33		55		176		340
Torsional Backlash <sup>2)</sup> $\Delta\phi$	arcmin	$\leq 7 - 8.5$		$\leq 5 - 7.5$		$\leq 5 - 7.5$		$\leq 4 - 6.5$		$\leq 4 - 6.5$		$\leq 4 - 6.5$		$\leq 4 - 4.5$
Input Speed Max. $n_{1MAX}$	Continuous	3500	3500	3500	3500	3000	3500	3000	3000	2100	3000	1300	2100	1300
	Cyclic	6000	6000	6000	6000	4500	6000	4000	4500	3500	4000	3000	3500	3000
Efficiency (@nom torque)	%	96	94	96	94	96	94	96	94	96	94	96	94	94
Weight	kg	3.3	3.9	4.0	4.6	6.8	7.0	12.8	11.3	23.2	21.3	47.4	43.2	82
	lbs	7.3	8.6	8.8	101	15	16	28.5	25	51	47	105	95	181
Noise <sup>3)</sup>	dB(A)	$\leq 70$	$\leq 70$	$\leq 70$	$\leq 70$	$\leq 70$	$\leq 70$	$\leq 70$	$\leq 72$	$\leq 72$	$\leq 72$	$\leq 74$	$\leq 72$	$\leq 74$

Performance by Bearing Design Option <sup>4)</sup> (R = Ball bearing D = Double row angular contact bearing Z = Cylindrical roller bearing)

Size/Generation		P22KX	P32KX	P42KX	P52KX	P72KX	P82KX	P92KX
Axial Load Max. $F_{2AMAX}$	R N	500	1000	1500	2300	2900	4700	6000
	D N	—	1400	2250	3500	4500	7500	10,000
	Z N	—	600	1000	1600	2000	3600	5000
Radial Load Max. $F_{2RMAX}$	R N	1200	2500	4000	6500	8000	13,000	18,000
	D N	—	2750	4500	7000	9000	15,000	20,000
	Z N	—	3000	5000	8000	10,000	18,000	27,000
Tilting Moment Max. $M_{2KMAX}$	R Nm	34	88	160	338	536	897	1665
	D Nm	—	105	194	406	648	1140	2070
	Z Nm	—	105	200	416	670	1242	2500

<sup>1)</sup> 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.

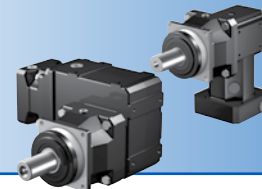
$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$$

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

<sup>3)</sup> Measurement at one (1) meter distance with input speed ( $n_1$ ) of 2000 RPM.

<sup>4)</sup> See page 221 for output bearing options. Rating based on output speed ( $n_2$ ) of 100 RPM. For values at other speeds see page 220.





# Overview

## PK Performance Overview

PK 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/Generation/# of Stages			P521	P721		P821		P921
Secondary Unit			K1	K1	K2	K2	K3	K4
Acceleration Torque	$M_{2BMAX}$	Nm	300	650	700	1400	1600	2700
Output Torque Nom. <sup>1)</sup>	$M_{2N}$	Nm	210	440	440	1000	1000	2000
Torsional Stiffness	$C_2$	Nm/arcmin	26	46	45	64	108	247
Torsional Backlash <sup>2)</sup>	$\Delta\phi$	arcmin	≤5	≤4	≤4.5	≤3.5	≤4.5	≤3.5
Input Speed Max.	$n_{1MAX}$	Continuous	4000	4000	4000	4000	3500	3500
		Cyclic	6000	6000	5500	5500	5000	5000
Efficiency (@nom torque)		%	94	94	94	94	94	94
Weight		kg	22.4	26.5	37	50	55	96.4
		lbs	49	59	82	110	121	213
Noise <sup>3)</sup>		dB(A)	≤63	≤63	≤64	≤64	≤65	≤66

Performance by Bearing Design Option<sup>4)</sup> (R = Ball bearing D = Double row angular contact bearing Z = Cylindrical roller bearing)

Size/Secondary Unit			P5_K1	P7_K1	P7_K2	P8_K2	P8_K3	P9_K4
Axial Load Max.	R	N	2300	2900	2900	4700	4700	6000
	D	N	3500	4500	4500	7500	7500	10,000
	Z	N	1600	2000	2000	3600	3600	5000
Radial Load Max.	R	N	6500	8000	8000	13,000	13,000	18,000
	D	N	7000	9000	9000	15,000	15,000	20,000
	Z	N	8000	10,000	10,000	18,000	18,000	27,000
Tilting Moment Max.	R	Nm	338	536	536	897	897	1665
	D	Nm	406	648	648	1140	1140	2070
	Z	Nm	416	670	670	1242	1242	2500

<sup>1)</sup> 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.

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

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

<sup>3)</sup> Measurement at one (1) meter distance with input speed ( $n_1$ ) of 2000 RPM.

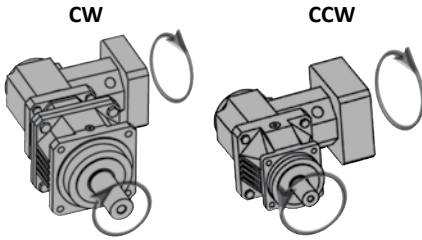
<sup>4)</sup> See page 221 for output bearing options. Rating based on output speed ( $n_2$ ) of 100 RPM. For values at other speeds see page 220.

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

## PKX/PK Series Direction of Rotation

### PKX Series



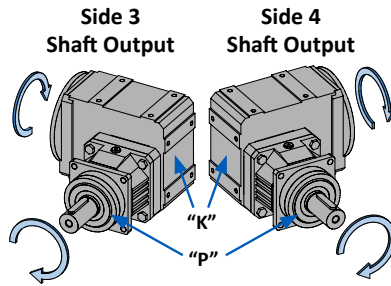
1 Stage Units  
(P7 & P8)

1 Stage Units  
(P2 thru P5)

2 Stage Units  
(P8 & P9)

2 Stage Units  
(P2 thru P7)

### PK Series



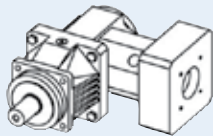
For PK units, the “P” Series planetary output unit can be mounted on either the right (Side 3) or the left (Side 4) of the “K” Series right angle secondary unit. Note CCW input direction of rotation and CW output shaft direction with both mounting configurations.

**IMPORTANT:** When ordering, Mounting Side 3 or Side 4 **MUST BE SPECIFIED**.

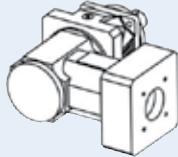
## PKX Mounting Position Options

**Horizontal Positions** (EL1, EL2, EL5, EL6) are interchangeable;

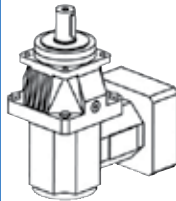
**Vertical Positions** (EL3 and EL4) **MUST BE SPECIFIED**



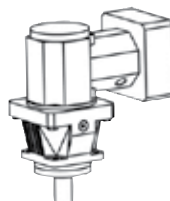
EL1



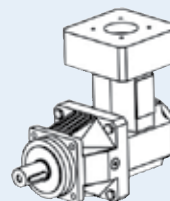
EL2



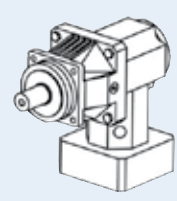
EL3



EL4



EL5



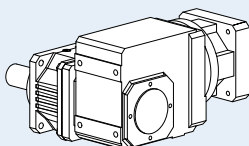
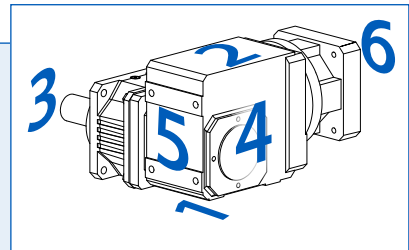
EL6

**IMPORTANT:** Mounting PKX is either vertical mounting position (EL3 or EL4) must be specified when ordering.

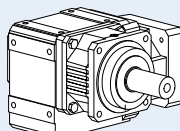
## PK Mounting Position Options

When ordering any PK unit, the Mounting Position **MUST BE SPECIFIED** using one of the Mounting Position order codes below.

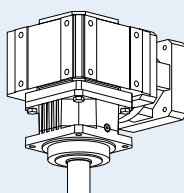
*Note: the code relates to the orientation side that faces down.  
For example, EL1 has side 1 facing down, EL2 has side 2 facing down, etc.*



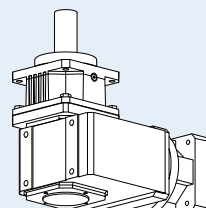
EL1



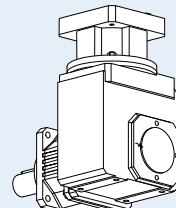
EL2



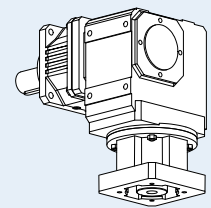
EL3



EL4



EL5



EL6



# Overview

## PKX/PK Series Motor Mounting Plate Option

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

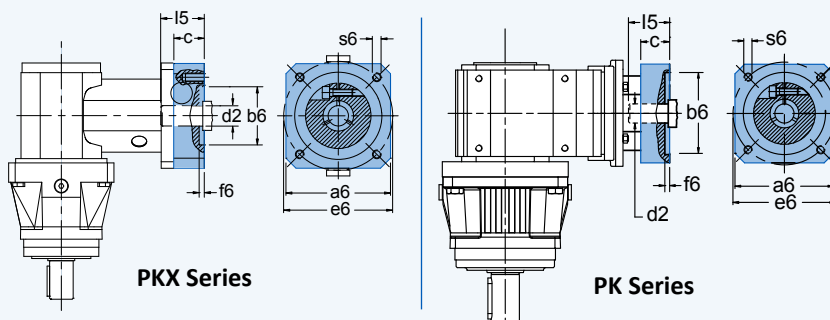
### NOTE: When ordering a gearhead:

- 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 STÖBER Technical Support.

### Customer Required Dimensions for Properly Sized Motor Mounting Plate

Motor information required with Motor Adapter (MF option for PKX; ME option for PK)



- 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.)

### PKX Series Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)

	P221KX3 P222KX3	P321KX3 P322KX3 P422KX3	P421KX4 P522KX4	P521KX5 P722KX5	P721KX7 P822KX7	P821KX8 P922KX8
Maximum Allowed Motor Shaft Dia. d2	14	19	24	32	38	48
Minimum Allowed Motor Plate Thickness c*	15	18	21	24	25	33

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

### PK Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)

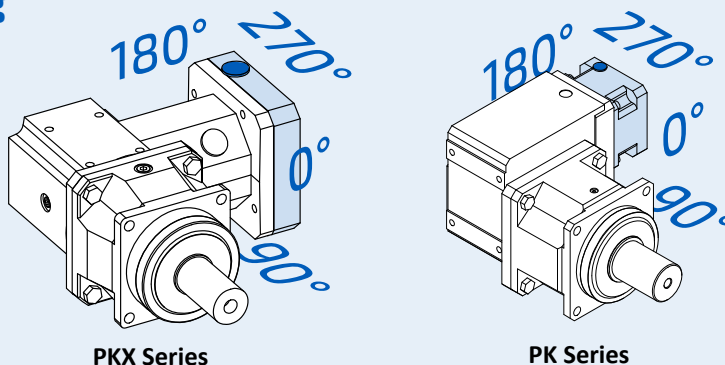
	ME10	ME20	ME30	ME40	ME50
Maximum Allowed Motor Shaft Dia. d2	19	32	38	48	60
Minimum Allowed Motor Plate Thickness c*	21	24	25	33	43

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

PKX/PK Series: RIGHT ANGLE – Shaft Output

## PKX/PK Series Motor Mounting Plate Access Hole

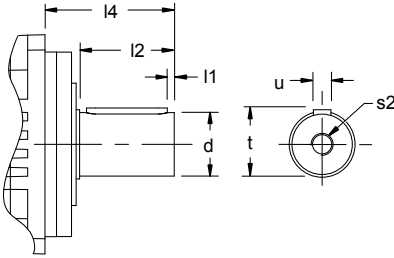
Access to the clamping screw for the motor coupling is located on the 270° side of the motor mounting plate at the location shown. If necessary, the motor mounting plate can be rotated in the field, if a 0°, 90° or 180° orientation for the access hole is desirable.



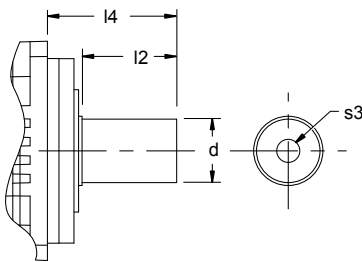
# PKX/PK Series: RIGHT ANGLE – Shaft Output

## PKX/PK Series Output Shaft Options (“P” or “G” designated in part number, for example: P4215 P ...)

### P Shaft with Key



### G Shaft without Key



Unit	D k6 mm	l1	l2	l4	s2 <sup>(1)</sup>	T	U <sup>(2)</sup>	
		mm	mm	mm		mm	W x H x L	
P2*	12	+0.012/+0.001	2	22	36	M4	13.5	A4x4x18
P3*	16	+0.012/+0.001	2	28	48	M5	18.0	A5x5x22
P4*	22	+0.015/+0.002	3	36	56	M8	24.5	A6x6x28
P5	32	+0.018/+0.002	3	58	88	M12	35.0	A10x8x50
P7	40	+0.018/+0.002	4	82	112	M16	43.0	A12x8x70
P8	55	+0.021/+0.002	6	82	112	M20	59.0	A16x10x70
P9	75	+0.021/+0.002	7	105	143	M20	79.5	A20x12x90

\*PKX only

Unit	d k6 mm	l2	l4	s3 <sup>(1)</sup>	
		mm	mm		
P2*	12	+0.012/+0.001	22	36	M4
P3*	16	+0.012/+0.001	28	48	M5
P4*	22	+0.015/+0.002	36	56	M8
P5	32	+0.018/+0.002	58	88	M12
P7	40	+0.018/+0.002	82	112	M16
P8	55	+0.021/+0.002	82	112	M20
P9	75	+0.021/+0.002	105	143	M20

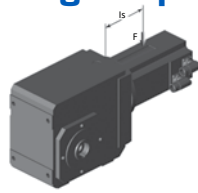
\*PKX only

<sup>(1)</sup> The center hole in shafts with keys (Option “P”) are machined to DIN 332 T2 shape DR.

<sup>(2)</sup> Feather keys are tolerated according to standard DIN 6885.

## 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 “l<sub>s</sub>” of the motor.



$$M_{1k} = F \times l_s \leq M_{1k}$$

M <sub>1k</sub>	PK (ME Motor Adapters)					PKX (MF Motor Adapters)				
	ME10	ME20	ME30	ME40	ME50	PKX3	PKX4	PKX5	PKX7	PKX8
Nm	25	60	125	250	600	12	24	50	100	300

## PKX/PK 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<sub>2</sub> is the desired speed:

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

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

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

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

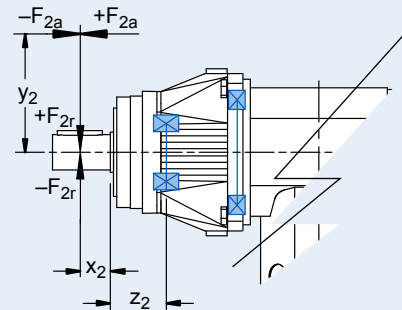
$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot F_{2rb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot F_{2rbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq F_{2R}$$

Where:

F <sub>2a</sub>	Axial Load at Output Shaft	M <sub>2K</sub>	Rated Tilting Torque
F <sub>2A</sub>	Permissible Axial Load	M <sub>2k</sub>	Equivalent Tilting Load
F <sub>2r</sub>	Radial Load at Output Shaft	M <sub>2KB</sub>	Acceleration Tilting Torque
F <sub>2R</sub>	Permissible Radial Load	z <sub>2</sub>	Distance Factor
F <sub>2RB</sub>	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.



The hours of life (L<sub>h</sub>) of the unit can be determined by the following formula:

**bearing life for duty cycle ≤ 40%**

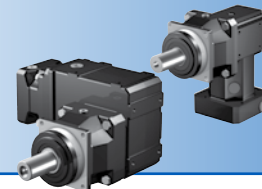
$$L_h > 10,000 \text{ hours if } M_{2k}/M_{2A} < 1.25 \text{ and } > 1$$

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

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

**bearing life for duty cycle ≥ 40%**

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



# Overview

## PKX/PK Output Bearing Options

	<b>R Ball Bearing</b>	<b>D Double Row Angular Contact Bearing</b>	<b>Z Cylindrical Roller Bearing</b>
<b>PKX Series</b>			
<b>PK Series</b>			
<b>Characteristics:</b>	<ul style="list-style-type: none"> <li>Minimal frictional torque</li> <li>Good radial load capacity</li> <li>Axial load approx. 35% of radial load</li> </ul>	<ul style="list-style-type: none"> <li>Low frictional torque</li> <li>Good radial bearing capacity</li> <li>Axial load approx. 50% of radial load</li> </ul>	<ul style="list-style-type: none"> <li>Very good radial load capacity</li> <li>Axial load approx. 20% of radial load</li> </ul>
<b>Applications:</b>	<ul style="list-style-type: none"> <li>Spur geared rack/pinion</li> <li>Couplings</li> <li>Belt with or without light tension</li> </ul>	<ul style="list-style-type: none"> <li>Helical geared rack/pinion</li> <li>Couplings with high axial load</li> <li>Belt with or without light tension</li> </ul>	<ul style="list-style-type: none"> <li>Prestressed belt drive</li> <li>Prestressed spur rack drive</li> <li>Applications with high radial loads and/or high service requirements</li> </ul>

## Permissible Output Shaft Load and Tilting Moments\*

	Z <sub>2</sub> (mm)	F <sub>2A</sub> (N)	F <sub>2R</sub> (N)	F <sub>2RB</sub> (N)	M <sub>2K</sub> (Nm)	M <sub>2KB</sub> (Nm)
<b>R Ball Bearing</b>						
P2*	17	500	1200	1300	34	36
P3*	21	1000	2500	2500	88	88
P4*	22	1500	4000	4500	160	180
P5	23	2300	6500	7000	338	364
P7	26	2900	8000	9000	536	603
P8	28	4700	13,000	18,000	897	1242
P9	40	6000	18,000	27,000	1665	2498
<b>D Double Row Angular Contact Bearing</b>						
P3*	24	1400	2750	2750	105	105
P4*	25	2250	4500	5000	194	215
P5	29	3500	7000	8000	406	464
P7	31	4500	9000	10000	648	720
P8	35	7500	15,000	18,000	1140	1368
P9	51	10,000	20,000	30,000	2070	3105
<b>Z Cylindrical Roller Bearing</b>						
P3*	21	600	3000	3000	105	105
P4*	22	1000	5000	5000	200	200
P5	23	1600	8000	8000	416	416
P7	26	2000	10,000	10,000	670	670
P8	28	3600	18,000	18,000	1242	1242
P9	40	5000	27,000	35,000	2500	3238

\* Refer to illustration and definitions on page 220. Sizes P2-P4 available on PKX only.

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F<sub>2A'</sub>, F<sub>2R'</sub> and M<sub>2K</sub> can be multiplied by a factor of 2.

The permissible load values given are valid with the load applied to the center of the output shaft (x<sub>2</sub>).

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output



Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4				

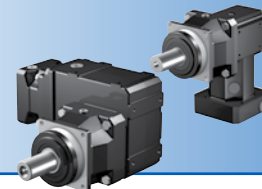
## P2KX

4.000	16	22	44	≤8.5	P221_0040KX301VF0010MF	3000	2500	4500	19	1.1	1.5
5.000	16	22	44	≤8	P221_0050KX301VF0010MF	3000	2500	4500	19	1.0	1.6
7.000	16	22	44	≤7.5	P221_0070KX301VF0010MF	3000	2500	4500	19	1.0	1.7
8.000	16	22	44	≤8.5	P221_0040KX301VF0020MF	3500	3000	5500	19	0.8	1.5
10.00	16	22	44	≤8	P221_0050KX301VF0020MF	3500	3000	5500	19	0.8	1.6
12.00	16	22	44	≤8.5	P221_0040KX301VF0030MF	3500	3500	6000	19	0.8	1.5
14.00	16	22	44	≤7.5	P221_0070KX301VF0020MF	3500	3000	5500	19	0.8	1.7
15.00	16	22	44	≤8	P221_0050KX301VF0030MF	3500	3500	6000	19	0.7	1.6
16.00	14	18	36	≤7.5	P221_0080KX301VF0020MF	3500	3000	5500	19	0.8	1.6
20.00	12	18	36	≤7	P221_0100KX301VF0020MF	3500	3000	5500	19	0.8	1.6
21.00	16	22	44	≤7.5	P221_0070KX301VF0030MF	3500	3500	6000	19	0.7	1.7
24.00	14	18	36	≤7.5	P221_0080KX301VF0030MF	3500	3500	6000	19	0.7	1.6
30.00	12	18	36	≤7	P221_0100KX301VF0030MF	3500	3500	6000	19	0.7	1.6
32.00	16	22	44	≤8.5	P222_0160KX301VF0020MF	3500	3000	5500	19	0.8	1.8
35.00	16	22	44	≤8.5	P222_0350KX301VF0010MF	3000	2500	4500	19	1.0	1.8
40.00	16	22	44	≤8.5	P222_0200KX301VF0020MF	3500	3000	5500	19	0.8	1.8
50.00	16	22	44	≤8.5	P222_0250KX301VF0020MF	3500	3000	5500	19	0.8	1.8
56.00	16	22	44	≤8.5	P222_0280KX301VF0020MF	3500	3000	5500	19	0.8	1.8
60.00	16	22	44	≤8.5	P222_0200KX301VF0030MF	3500	3500	6000	19	0.8	1.8
64.00	14	18	36	≤8.5	P222_0320KX301VF0020MF	3500	3000	5500	19	0.8	1.7
70.00	16	22	44	≤8.5	P222_0350KX301VF0020MF	3500	3000	5500	19	0.8	1.8
75.00	16	22	44	≤8.5	P222_0250KX301VF0030MF	3500	3500	6000	19	0.7	1.8
80.00	16	22	44	≤8.5	P222_0400KX301VF0020MF	3500	3000	5500	19	0.8	1.8
84.00	16	22	44	≤8.5	P222_0280KX301VF0030MF	3500	3500	6000	19	0.7	1.8
100.0	16	22	44	≤8	P222_0500KX301VF0020MF	3500	3000	5500	19	0.8	1.8
105.0	16	22	44	≤8.5	P222_0350KX301VF0030MF	3500	3500	6000	19	0.7	1.8
120.0	16	22	44	≤8.5	P222_0400KX301VF0030MF	3500	3500	6000	19	0.7	1.8
140.0	16	22	44	≤8	P222_0700KX301VF0020MF	3500	3000	5500	19	0.8	1.8
150.0	16	22	44	≤8	P222_0500KX301VF0030MF	3500	3500	6000	19	0.7	1.8
200.0	12	18	36	≤8	P222_1000KX301VF0020MF	3500	3000	5500	19	0.8	1.6
210.0	16	22	44	≤8	P222_0700KX301VF0030MF	3500	3500	6000	19	0.7	1.8
300.0	12	18	36	≤8	P222_1000KX301VF0030MF	3500	3500	6000	19	0.7	1.6

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling



# Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia <sup>4)</sup> J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous EL 1,2,5,6	Cyclic EL 3,4	All			
	Nm	Nm	Nm								

## P3KX

3.000	29	38	68	≤7.5	P321_0030KX301VF0010MF	3000	2500	4500	19	1.2	2.5
4.000	39	50	91	≤6.5	P321_0040KX301VF0010MF	3000	2500	4500	19	1.1	3.2
5.000	45	63	113	≤6	P321_0050KX301VF0010MF	3000	2500	4500	19	1.1	3.6
6.000	29	38	77	≤7.5	P321_0030KX301VF0020MF	3500	3000	5500	19	0.9	2.5
7.000	45	60	130	≤5.5	P321_0070KX301VF0010MF	3000	2500	4500	19	1.0	3.7
8.000	39	50	103	≤6.5	P321_0040KX301VF0020MF	3500	3000	5500	19	0.8	3.2
10.00	45	63	129	≤6	P321_0050KX301VF0020MF	3500	3000	5500	19	0.8	3.6
12.00	39	50	103	≤6.5	P321_0040KX301VF0030MF	3500	3500	6000	19	0.8	3.2
14.00	45	60	130	≤5.5	P321_0070KX301VF0020MF	3500	3000	5500	19	0.8	3.7
15.00	45	63	129	≤6	P321_0050KX301VF0030MF	3500	3500	6000	19	0.8	3.6
16.00	40	50	100	≤5.5	P321_0080KX301VF0020MF	3500	3000	5500	19	0.8	3.7
20.00	30	50	100	≤5	P321_0100KX301VF0020MF	3500	3000	5500	19	0.8	3.7
21.00	45	60	130	≤5.5	P321_0070KX301VF0030MF	3500	3500	6000	19	0.7	3.7
24.00	40	50	100	≤5.5	P321_0080KX301VF0030MF	3500	3500	6000	19	0.7	3.7
30.00	30	50	100	≤5	P321_0100KX301VF0030MF	3500	3500	6000	19	0.7	3.7
32.00	45	65	130	≤5.5	P322_0160KX301VF0020MF	3500	3000	5500	19	0.8	4.4
35.00	45	65	130	≤5.5	P322_0350KX301VF0010MF	3000	2500	4500	19	1.0	4.5
40.00	45	65	130	≤5.5	P322_0200KX301VF0020MF	3500	3000	5500	19	0.8	4.5
50.00	45	65	130	≤5.5	P322_0250KX301VF0020MF	3500	3000	5500	19	0.8	4.5
56.00	45	65	130	≤5.5	P322_0280KX301VF0020MF	3500	3000	5500	19	0.8	4.4
60.00	45	65	130	≤5.5	P322_0200KX301VF0030MF	3500	3500	6000	19	0.8	4.5
64.00	40	50	100	≤5.5	P322_0320KX301VF0020MF	3500	3000	5500	19	0.8	4.0
70.00	45	65	130	≤5.5	P322_0350KX301VF0020MF	3500	3000	5500	19	0.8	4.5
75.00	45	65	130	≤5.5	P322_0250KX301VF0030MF	3500	3500	6000	19	0.7	4.5
80.00	45	65	130	≤5.5	P322_0400KX301VF0020MF	3500	3000	5500	19	0.8	4.4
84.00	45	65	130	≤5.5	P322_0280KX301VF0030MF	3500	3500	6000	19	0.7	4.4
100.0	45	65	130	≤5	P322_0500KX301VF0020MF	3500	3000	5500	19	0.8	4.5
105.0	45	65	130	≤5.5	P322_0350KX301VF0030MF	3500	3500	6000	19	0.7	4.5
120.0	45	65	130	≤5.5	P322_0400KX301VF0030MF	3500	3500	6000	19	0.7	4.4
140.0	45	60	130	≤5	P322_0700KX301VF0020MF	3500	3000	5500	19	0.8	4.2
150.0	45	65	130	≤5	P322_0500KX301VF0030MF	3500	3500	6000	19	0.7	4.5
200.0	30	50	100	≤5	P322_1000KX301VF0020MF	3500	3000	5500	19	0.8	3.9
210.0	45	60	130	≤5	P322_0700KX301VF0030MF	3500	3500	6000	19	0.7	4.2
300.0	30	50	100	≤5	P322_1000KX301VF0030MF	3500	3500	6000	19	0.7	3.9

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output



Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

## P4KX

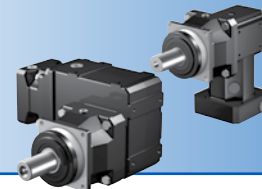
3.000	50	73	155	≤7.5	P421_0030KX401VF0010MF	2500	2000	4000	24	3.0	5.2
4.000	78	97	206	≤6.5	P421_0040KX401VF0010MF	2500	2000	4000	24	2.7	6.9
5.000	85	120	240	≤6	P421_0050KX401VF0010MF	2500	2000	4000	24	2.5	8.0
6.000	50	73	155	≤7.5	P421_0030KX401VF0020MF	2500	2500	5000	24	1.8	5.2
7.000	85	110	240	≤5.5	P421_0070KX401VF0010MF	2500	2000	4000	24	2.4	8.4
8.000	78	97	206	≤6.5	P421_0040KX401VF0020MF	2500	2500	5000	24	1.7	6.9
10.00	85	120	240	≤6	P421_0050KX401VF0020MF	2500	2500	5000	24	1.7	8.0
12.00	78	97	206	≤6.5	P421_0040KX401VF0030MF	3000	3000	5500	24	1.5	6.9
14.00	85	110	240	≤5.5	P421_0070KX401VF0020MF	2500	2500	5000	24	1.6	8.4
15.00	85	120	240	≤6	P421_0050KX401VF0030MF	3000	3000	5500	24	1.5	8.0
16.00	80	100	200	≤5.5	P421_0080KX401VF0020MF	2500	2500	5000	24	1.6	8.3
20.00	60	100	200	≤5	P421_0100KX401VF0020MF	2500	2500	5000	24	1.6	8.3
21.00	85	110	240	≤5.5	P421_0070KX401VF0030MF	3000	3000	5500	24	1.4	8.4
24.00	80	100	200	≤5.5	P421_0080KX401VF0030MF	3000	3000	5500	24	1.4	8.3
30.00	60	100	200	≤5	P421_0100KX401VF0030MF	3000	3000	5500	24	1.4	8.3
32.00	85	120	240	≤5.5	P422_0160KX301VF0020MF	3500	3000	5500	19	0.8	9.7
35.00	85	120	240	≤5.5	P422_0350KX301VF0010MF	3000	2500	4500	19	1.0	10.4
40.00	85	120	240	≤5.5	P422_0200KX301VF0020MF	3500	3000	5500	19	0.8	10.2
50.00	85	120	240	≤5.5	P422_0250KX301VF0020MF	3500	3000	5500	19	0.8	10.4
56.00	85	120	240	≤5.5	P422_0280KX301VF0020MF	3500	3000	5500	19	0.8	10.0
60.00	85	120	240	≤5.5	P422_0200KX301VF0030MF	3500	3500	6000	19	0.8	10.2
64.00	80	100	200	≤5.5	P422_0320KX301VF0020MF	3500	3000	5500	19	0.8	9.1
70.00	85	120	240	≤5.5	P422_0350KX301VF0020MF	3500	3000	5500	19	0.8	10.4
75.00	85	120	240	≤5.5	P422_0250KX301VF0030MF	3500	3500	6000	19	0.8	10.4
80.00	85	120	240	≤5.5	P422_0400KX301VF0020MF	3500	3000	5500	19	0.8	10.0
84.00	85	120	240	≤5.5	P422_0280KX301VF0030MF	3500	3500	6000	19	0.8	10.0
100.0	85	120	240	≤5	P422_0500KX301VF0020MF	3500	3000	5500	19	0.8	10.4
105.0	85	120	240	≤5.5	P422_0350KX301VF0030MF	3500	3500	6000	19	0.8	10.4
120.0	85	120	240	≤5.5	P422_0400KX301VF0030MF	3500	3500	6000	19	0.7	10.0
140.0	85	110	240	≤5	P422_0700KX301VF0020MF	3500	3000	5500	19	0.8	9.6
150.0	85	120	240	≤5	P422_0500KX301VF0030MF	3500	3500	6000	19	0.7	10.4
200.0	60	100	200	≤5	P422_1000KX301VF0020MF	3500	3000	5500	19	0.8	8.8
210.0	85	110	240	≤5	P422_0700KX301VF0030MF	3500	3500	6000	19	0.7	9.6
300.0	60	100	200	≤5	P422_1000KX301VF0030MF	3500	3500	6000	19	0.7	8.8

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling





# Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia <sup>4)</sup> J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

## P5KX (continued next page)

3.000	120	183	387	≤6.5	P521_0030KX501VF0010MF	2500	2000	3500	32	10.3	13.5
4.000	194	244	515	≤5.5	P521_0040KX501VF0010MF	2500	2000	3500	32	8.5	17.5
5.000	210	300	600	≤5	P521_0050KX501VF0010MF	2500	2000	3500	32	8.1	20.5
6.000	120	183	387	≤6.5	P521_0030KX501VF0020MF	2500	2500	4500	32	6.0	13.5
7.000	210	270	600	≤4.5	P521_0070KX501VF0010MF	2500	2000	3500	32	7.7	22.6
8.000	194	244	515	≤5.5	P521_0040KX501VF0020MF	2500	2500	4500	32	≤5.5	17.5
10.00	210	300	600	≤5	P521_0050KX501VF0020MF	2500	2500	4500	32	5.4	20.5
12.00	194	244	515	≤5.5	P521_0040KX501VF0030MF	3000	3000	5000	32	4.9	17.5
14.00	210	270	600	≤4.5	P521_0070KX501VF0020MF	2500	2500	4500	32	5.3	22.6
15.00	210	300	600	≤5	P521_0050KX501VF0030MF	3000	3000	5000	32	4.8	20.5
16.00	200	250	500	≤4.5	P521_0080KX501VF0020MF	2500	2500	4500	32	5.3	22.2
20.00	140	250	500	≤4	P521_0100KX501VF0020MF	2500	2500	4500	32	5.3	22.6
21.00	210	270	600	≤4.5	P521_0070KX501VF0030MF	3000	3000	5000	32	4.8	22.6
24.00	200	250	500	≤4.5	P521_0080KX501VF0030MF	3000	3000	5000	32	4.8	22.2
30.00	140	250	500	≤4	P521_0100KX501VF0030MF	3000	3000	5000	32	4.8	22.6

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1, 2, 3, 4			

## P5K (continued next page)

12.00	12/1	120	200	360	5	P521_0030K102_0040ME10	3300	3300	5000	>14≤19	1.7	22.2
						P521_0030K102_0040ME20				>19≤24	3.6	22.5
16.00	16/1	210	300	480	4.5	P521_0040K102_0040ME10	3300	3300	5000	>14≤19	1.6	24.4
						P521_0040K102_0040ME20				>19≤24	3.5	24.6
20.00	20/1	210	300	600	4	P521_0050K102_0040ME10	3300	3300	5000	>14≤19	1.5	26.0
						P521_0050K102_0040ME20				>19≤24	3.4	26.2
27.84	7600/273	210	300	600	4	P521_0050K102_0056ME10	3300	3300	5000	>14≤19	1.3	26.1
						P521_0050K102_0056ME20				>19≤24	3.2	26.2
30.00	30/1	210	300	600	4	P521_0050K102_0060ME10	3300	3300	5000	>14≤19	1.1	26.2
						P521_0050K102_0060ME20				>19≤24	3.0	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

## PSKX (continued next page)

32.00	210	300	600	≤4.5	P522_0160KX401VF0020MF	2500	2500	5000	24	1.7	24.8
35.00	210	300	600	≤4.5	P522_0350KX401VF0010MF	2500	2000	4000	24	2.5	27.1
40.00	210	300	600	≤4.5	P522_0200KX401VF0020MF	2500	2500	5000	24	1.7	26.3
50.00	210	300	600	≤4.5	P522_0250KX401VF0020MF	2500	2500	5000	24	1.7	26.9
56.00	210	300	600	≤4.5	P522_0280KX401VF0020MF	2500	2500	5000	24	1.6	25.9
60.00	210	300	600	≤4.5	P522_0200KX401VF0030MF	3000	3000	5500	24	1.5	26.3
64.00	200	250	500	≤4.5	P522_0320KX401VF0020MF	2500	2500	5000	24	1.7	24.5
70.00	210	300	600	≤4.5	P522_0350KX401VF0020MF	2500	2500	5000	24	1.6	27.1
75.00	210	300	600	≤4.5	P522_0250KX401VF0030MF	3000	3000	5500	24	1.5	26.9
80.00	210	300	600	≤4.5	P522_0400KX401VF0020MF	2500	2500	5000	24	1.6	25.8
84.00	210	300	600	≤4.5	P522_0280KX401VF0030MF	3000	3000	5500	24	1.4	25.9

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
		Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
		Nm	Nm	Nm					EL 1, 2, 3, 4	EL 5, 6			

## PSK (continued next page)

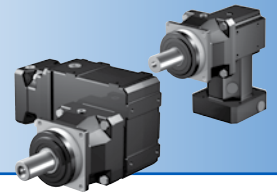
33.22	299/9	210	300	600	4	P521_0050K102_0066ME10	3600	3600	5500	>14≤19	1.0	26.2
						P521_0050K102_0066ME20				>19≤24	2.9	
41.55	1911/46	210	300	600	4	P521_0050K102_0083ME10	3600	3600	5500	>14≤19	0.9	26.2
						P521_0050K102_0083ME20				>19≤24	2.8	
46.25	8740/189	210	300	600	4	P521_0050K102_0092ME10	3600	3600	5500	>14≤19	1.0	26.2
						P521_0050K102_0092ME20				>19≤24	2.9	
57.83	1330/23	210	300	600	4	P521_0050K102_0115ME10	3600	3600	5500	>14≤19	0.9	26.3
						P521_0050K102_0115ME20				>19≤24	2.8	
70.57	494/7	210	300	600	4	P521_0050K102_0140ME10	4000	4000	6000	>14≤19	0.8	26.3
						P521_0050K102_0140ME20	3700	3700		>19≤24	2.7	
87.82	10450/119	210	300	600	4	P521_0050K102_0175ME10	4000	4000	6000	>14≤19	0.8	26.3
						P521_0050K102_0175ME20	3700	3700		>19≤24	2.7	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations.

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

# Selection Data



Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia <sup>4)</sup> J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

## P5KX (continued from previous page)

100.0	210	300	600	≤4	P522_0500KX401VF0020MF	2500	2500	5000	24	1.6	27.0
105.0	210	300	600	≤4.5	P522_0350KX401VF0030MF	3000	3000	5500	24	1.4	27.1
120.0	210	300	600	≤4.5	P522_0400KX401VF0030MF	3000	3000	5500	24	1.4	25.8
140.0	210	270	600	≤4	P522_0700KX401VF0020MF	2500	2500	5000	24	1.6	26.2
150.0	210	300	600	≤4	P522_0500KX401VF0030MF	3000	3000	5500	24	1.4	27.0
200.0	140	250	500	≤4	P522_1000KX401VF0020MF	2500	2500	5000	24	1.6	24.3
210.0	210	270	600	≤4	P522_0700KX401VF0030MF	3000	3000	5500	24	1.4	26.2
300.0	140	250	500	≤4	P522_1000KX401VF0030MF	3000	3000	5500	24	1.4	24.3

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Reducer Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
			Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous		Cyclic			
			Nm	Nm	Nm			EL 1, 2, 3, 4	EL 5, 6	All			

## P5K (continued from previous page)

116.3	5700/49	210	300	600	4	P521_0050K102_0230ME10	4000	4000	7000	>14≤19	0.7	26.3
						P521_0050K102_0230ME20	3700	3700	6000	>19≤24	2.6	
140.2	2945/21	210	300	600	4	P521_0050K102_0280ME10	4000	4000	7000	>14≤19	0.7	26.3
						P521_0050K102_0280ME20	3700	3700	6000	>19≤24	2.6	
175.5	3686/21	210	300	600	4	P521_0050K102_0350ME10	4000	4000	7000	>14≤19	0.7	26.3
						P521_0050K102_0350ME20	3700	3700	6000	>19≤24	2.6	
234.6	11495/49	210	300	600	4	P521_0050K102_0470ME10	4000	4000	7000	>14≤19	0.6	26.3
						P521_0050K102_0470ME10				≤14	0.4	
280.5	5890/21	210	300	600	4	P521_0050K102_0560ME10	4000	4000	7000	>14≤19	0.6	26.3
						P521_0050K102_0560ME10				≤14	0.4	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

## P7KX (continued next page)

3.000	280	364	680	≤6.5	P721_0030KX701VF0010MF	1800	1600	3000	38	33.2	36.8
4.000	388	485	907	≤5.5	P721_0040KX701VF0010MF	1800	1600	3000	38	28.4	43.0
5.000	440	606	1134	≤5	P721_0050KX701VF0010MF	1800	1600	3000	38	26.9	46.3
6.000	280	364	773	≤6.5	P721_0030KX701VF0020MF	1800	1800	3500	38	16.8	36.8
7.000	440	650	1254	≤4.5	P721_0070KX701VF0010MF	1800	1600	3000	38	25.9	49.2
8.000	388	485	1031	≤5.5	P721_0040KX701VF0020MF	1800	1800	3500	38	15.6	43.0
10.00	440	606	1289	≤5	P721_0050KX701VF0020MF	1800	1800	3500	38	15.2	46.3
12.00	388	485	1031	≤5.5	P721_0040KX701VF0030MF	2100	2100	4000	38	12.8	43.0
14.00	440	650	1254	≤4.5	P721_0070KX701VF0020MF	1800	1800	3500	38	15.0	49.2
15.00	440	606	1289	≤5	P721_0050KX701VF0030MF	2100	2100	4000	38	12.6	46.3
16.00	400	500	1000	≤4.5	P721_0080KX701VF0020MF	1800	1800	3500	38	14.9	48.8
20.00	300	500	1000	≤4	P721_0100KX701VF0020MF	1800	1800	3500	38	14.8	47.0
21.00	440	650	1254	≤4.5	P721_0070KX701VF0030MF	2100	2100	4000	38	12.5	49.2
24.00	400	500	1000	≤4.5	P721_0080KX701VF0030MF	2100	2100	4000	38	12.5	48.8

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1, 2, 3, 4	EL 5, 6			

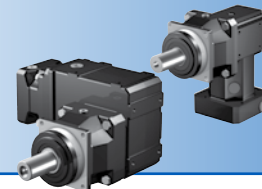
## P7K (continued next page)

12.00	12/1	270	270	360	4.5	P721_0030K202_0040ME10	3000	3000	4500	>14≤19	3.6	36.9
		280	500	900		P721_0030K202_0040ME20				>24≤32	7.0	38.1
						P721_0030K202_0040ME30				>32≤38	12.3	38.3
16.00	16/1	360	360	480	4.5	P721_0040K202_0040ME10	3000	3000	4500	>14≤19	3.3	43.1
		440	680	1200		P721_0040K202_0040ME20				>24≤32	6.7	44.1
						P721_0040K202_0040ME30				>32≤38	12.0	44.2
20.00	20/1	440	450	600	4	P721_0050K202_0040ME10	3000	3000	4500	>14≤19	3.2	46.4
			700	1400		P721_0050K202_0040ME20				>24≤32	6.6	47.1
						P721_0050K202_0040ME30				>32≤38	11.9	47.2
25.89	10535/407	440	700	1400	4	P721_0050K202_0052ME20	3000	3000	4500	>24≤32	5.7	47.1
						P721_0050K202_0052ME30				>32≤38	11.0	47.2
28.00	28/1	440	630	840	4	P721_0070K102_0040ME10	3300	3300	5000	>14≤19	1.6	46.7
						P721_0070K102_0040ME20				>19≤24	3.5	47.0

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations.

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)



# Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia <sup>4)</sup> J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

## P7KX (continued next page)

30.00	300	500	1000	≤4	<a href="#">P721_0100KX701VF0030MF</a>	2100	2100	4000	38	12.5	47.0
32.00	440	700	1381	≤4.5	<a href="#">P722_0160KX501VF0020MF</a>	2500	2500	4500	32	5.6	49.4
35.00	440	700	1400	≤4.5	<a href="#">P722_0350KX501VF0010MF</a>	2500	2000	3500	32	7.8	52.2
40.00	440	700	1400	≤4.5	<a href="#">P722_0200KX501VF0020MF</a>	2500	2500	4500	32	5.5	50.8
50.00	440	700	1400	≤4.5	<a href="#">P722_0250KX501VF0020MF</a>	2500	2500	4500	32	5.4	51.7

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
Nom.	Exact	Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
		Nm	Nm	Nm					EL 1, 2, 3, 4			

## P7K (continued next page)

30.00	30/1	440	680	900	4	<a href="#">P721_0050K202_0060ME10</a>	3000	3000	4500	>14≤19	2.4	46.9
			700	1400		<a href="#">P721_0050K202_0060ME20</a>				>24≤32	5.8	47.2
						<a href="#">P721_0050K202_0060ME30</a>				>32≤38	11.1	
33.42	11395/341	440	700	1000	4	<a href="#">P721_0050K202_0067ME10</a>	3500	3500	5000	>14≤19	1.8	46.9
				1400		<a href="#">P721_0050K202_0067ME20</a>				>24≤32	5.2	47.2
						<a href="#">P721_0050K202_0067ME30</a>				>32≤38	10.5	
38.98	1520/39	440	650	1170	4	<a href="#">P721_0070K102_0056ME10</a>	3300	3300	5000	>14≤19	1.3	47.0
						<a href="#">P721_0070K102_0056ME20</a>				>19≤24	3.2	47.1
40.00	40/1	300	500	1000	3.5	<a href="#">P721_0100K102_0040ME10</a>	3300	3300	5000	>14≤19	1.5	45.9
						<a href="#">P721_0100K102_0040ME20</a>				>19≤24	3.4	46.0
41.99	12470/297	440	700	1260	4	<a href="#">P721_0050K202_0084ME10</a>	3500	3500	5000	>14≤19	1.4	47.1
				1400		<a href="#">P721_0050K202_0084ME20</a>				>24≤32	4.8	47.2
						<a href="#">P721_0050K202_0084ME30</a>				>32≤38	10.1	47.3
42.00	42/1	440	650	1250	4	<a href="#">P721_0070K102_0060ME10</a>	3300	3300	5000	>14≤19	1.1	47.0
						<a href="#">P721_0070K102_0060ME20</a>				>19≤24	3.0	47.1
45.95	11395/248	440	700	1380	4	<a href="#">P721_0050K202_0092ME10</a>	3500	3500	5000	>14≤19	1.6	47.1
				1400		<a href="#">P721_0050K202_0092ME20</a>				>24≤32	5.0	47.2
						<a href="#">P721_0050K202_0092ME30</a>				>32≤38	10.3	47.3
46.51	2093/45	440	650	1250	4	<a href="#">P721_0070K102_0066ME10</a>	3600	3600	5500	>14≤19	1.1	47.0
						<a href="#">P721_0070K102_0066ME20</a>				>19≤24	3.0	47.1

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

## P7KX (continued next page)

56.00	440	700	1381	≤4.5	<a href="#">P722_0280KX501VF0020MF</a>	2500	2500	4500	32	5.4	51.5
60.00	440	700	1400	≤4.5	<a href="#">P722_0200KX501VF0030MF</a>	3000	3000	5000	32	4.9	50.8
64.00	400	500	1000	≤4.5	<a href="#">P722_0320KX501VF0020MF</a>	2500	2500	4500	32	5.5	50.6
70.00	440	700	1400	≤4.5	<a href="#">P722_0350KX501VF0020MF</a>	2500	2500	4500	32	5.4	52.2
75.00	440	700	1400	≤4.5	<a href="#">P722_0250KX501VF0030MF</a>	3000	3000	5000	32	4.8	51.7
80.00	440	700	1381	≤4.5	<a href="#">P722_0400KX501VF0020MF</a>	2500	2500	4500	32	5.3	51.5
84.00	440	700	1381	≤4.5	<a href="#">P722_0280KX501VF0030MF</a>	3000	3000	5000	32	4.8	51.5

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
		Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
		Nm	Nm	Nm					EL 1, 2, 3, 4	EL 5, 6			

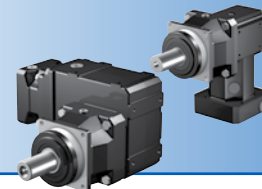
## P7K (continued next page)

55.68	15200/273	300	500	1000	3.5	<a href="#">P721_0100K102_0056ME10</a>	3300	3300	5000	>14≤19	1.3	46.0
						<a href="#">P721_0100K102_0056ME20</a>				>19≤24	3.2	46.1
57.73	6235/108	440	700	1400	4	<a href="#">P721_0050K202_0115ME10</a>	3500	3500	5000	>14≤19	1.3	47.2
						<a href="#">P721_0050K202_0115ME20</a>				>24≤32	4.7	47.3
						<a href="#">P721_0050K202_0115ME30</a>				>32≤38	10.0	
58.16	13377/230	440	650	1250	4	<a href="#">P721_0070K102_0083ME10</a>	3600	3600	5500	>14≤19	0.9	47.1
						<a href="#">P721_0070K102_0083ME20</a>				>19≤24	2.8	
60.00	60/1	300	500	1000	3.5	<a href="#">P721_0100K102_0060ME10</a>	3300	3300	5000	>14≤19	1.1	46.0
						<a href="#">P721_0100K102_0060ME20</a>				>19≤24	3.0	46.1
64.74	1748/27	440	650	1250	4	<a href="#">P721_0070K102_0092ME10</a>	3600	3600	5500	>14≤19	1.0	47.1
						<a href="#">P721_0070K102_0092ME20</a>				>19≤24	2.9	47.2
66.44	598/9	300	500	1000	3.5	<a href="#">P721_0100K102_0066ME10</a>	3600	3600	5500	>14≤19	1.0	46.1
						<a href="#">P721_0100K102_0066ME20</a>				>19≤24	2.9	
69.26	14405/208	440	700	1400	4	<a href="#">P721_0050K202_0140ME10</a>	3900	3900	5500	>14≤19	1.1	47.2
						<a href="#">P721_0050K202_0140ME20</a>	3700	3700		>24≤32	4.5	47.3
						<a href="#">P721_0050K202_0140ME30</a>	3500	3500		5000	>32≤38	
70.98	3549/50	440	650	1250	4	<a href="#">P721_0070K102_0100ME10</a>	4000	4000	6000	>14≤19	0.9	47.1
						<a href="#">P721_0070K102_0100ME20</a>	3700	3700		>19≤24	2.8	47.2
80.96	1862/23	440	650	1250	4	<a href="#">P721_0070K102_0115ME10</a>	3600	3600	5500	>14≤19	0.9	47.1
						<a href="#">P721_0070K102_0115ME20</a>				>19≤24	2.8	47.2
83.09	1911/23	300	500	1000	3.5	<a href="#">P721_0100K102_0083ME10</a>	3600	3600	5500	>14≤19	0.9	46.1
						<a href="#">P721_0100K102_0083ME20</a>				>19≤24	2.8	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations.

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)



# Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia <sup>4)</sup> J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

## P7KX (continued next page)

100.0	440	700	1400	≤4	<a href="#">P722_0500KX501VF0020MF</a>	2500	2500	4500	32	5.3	52.2
105.0	440	700	1400	≤4.5	<a href="#">P722_0350KX501VF0030MF</a>	3000	3000	5000	32	4.8	52.2
120.0	440	700	1381	≤4.5	<a href="#">P722_0400KX501VF0030MF</a>	3000	3000	5000	32	4.8	51.5
140.0	440	650	1254	≤4	<a href="#">P722_0700KX501VF0020MF</a>	2500	2500	4500	32	5.3	52.4

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
		Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
		Nm	Nm	Nm					EL 1, 2, 3, 4			

## P7K (continued next page)

83.09	1911/23	300	500	1000	3.5	<a href="#">P721_0100K102_0083ME10</a>	3600	3600	5500	>14≤19	0.9	46.1
						<a href="#">P721_0100K102_0083ME20</a>				>19≤24	2.8	
87.35	2795/32	440	700	1400	4	<a href="#">P721_0050K202_0175ME10</a>	3900	3900	5500	>14≤19	1.0	47.2
						<a href="#">P721_0050K202_0175ME20</a>				>24≤32	4.4	
						<a href="#">P721_0050K202_0175ME30</a>	3500	3500	5000	>32≤38	9.7	47.3
88.33	3003/34	440	650	1250	4	<a href="#">P721_0070K102_0125ME10</a>	4000	4000	6000	>14≤19	0.8	47.2
						<a href="#">P721_0070K102_0125ME20</a>				3700	3700	
92.49	17480/189	300	500	1000	3.5	<a href="#">P721_0100K102_0092ME10</a>	3600	3600	5500	>14≤19	1.0	46.1
						<a href="#">P721_0100K102_0092ME20</a>				>19≤24	2.9	
98.80	494/5	440	650	1250	4	<a href="#">P721_0070K102_0140ME10</a>	4000	4000	6000	>14≤19	0.8	47.2
						<a href="#">P721_0070K102_0140ME20</a>				3700	3700	
115.7	2660/23	300	500	1000	3.5	<a href="#">P721_0100K102_0115ME10</a>	3600	3600	5500	>14≤19	0.9	46.1
						<a href="#">P721_0100K102_0115ME20</a>				>19≤24	2.8	
115.9	14835/128	440	700	1400	4	<a href="#">P721_0050K202_0230ME10</a>	4000	4000	6500	>14≤19	0.9	47.3
						<a href="#">P721_0050K202_0230ME20</a>				3700	3700	
						<a href="#">P721_0050K202_0230ME30</a>	3500	3500	5000	>32≤38	9.6	
117.0	117/1	440	650	1250	4	<a href="#">P721_0070K102_0165ME10</a>	4000	4000	7000	>14≤19	0.7	47.2
						<a href="#">P721_0070K102_0165ME20</a>				3700	3700	
122.9	2090/17	440	650	1250	4	<a href="#">P721_0070K102_0175ME10</a>	4000	4000	6000	>14≤19	0.8	47.2
						<a href="#">P721_0070K102_0175ME20</a>				3700	3700	
139.8	559/4	440	700	1400	4	<a href="#">P721_0050K202_0280ME10</a>	4000	4000	6500	>14≤19	0.8	47.3
						<a href="#">P721_0050K202_0280ME20</a>				3700	3700	
141.1	2821/20	440	650	1250	4	<a href="#">P721_0070K102_0200ME10</a>	4000	4000	7000	>14≤19	0.7	47.2
						<a href="#">P721_0070K102_0200ME20</a>				3700	3700	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

## P7KX (continued from previous page)

150.0	440	700	1400	≤4	P722_0500KX501VF0030MF	3000	3000	5000	32	4.8	52.2
200.0	300	500	1000	≤4	P722_1000KX501VF0020MF	2500	2500	4500	32	5.3	48.4
210.0	440	650	1254	≤4	P722_0700KX501VF0030MF	3000	3000	5000	32	4.8	52.4
300.0	300	500	1000	≤4	P722_1000KX501VF0030MF	3000	3000	5000	32	4.8	48.4

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
		Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
		Nm	Nm	Nm					EL 1, 2, 3, 4	EL 5, 6			

## P7K (continued from previous page)

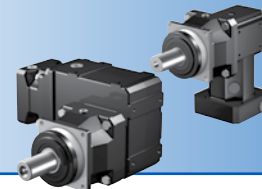
162.9	1140/7	440	650	1250	4	P721_0070K102_0230ME10	4000	4000	7000	>14≤19	0.7	47.2
						P721_0070K102_0230ME20	3700	3700	6000	>19≤24	2.6	
172.8	9675/56	440	700	1400	4	P721_0050K202_0350ME10	4000	4000	6500	>14≤19	0.8	47.3
						P721_0050K202_0350ME20	3700	3700	6000	>19≤24	2.7	
176.5	8827/50	440	650	1250	4	P721_0070K102_0250ME10	4000	4000	7000	>14≤19	0.7	47.2
						P721_0070K102_0250ME20	3700	3700	6000	>19≤24	2.6	
196.3	589/3	440	650	1250	4	P721_0070K102_0280ME10	4000	4000	7000	>14≤19	0.7	47.2
						P721_0070K102_0280ME20	3700	3700	6000	>19≤24	2.6	
231.1	1849/8	440	700	1400	4	P721_0050K202_0460ME10	4000	4000	6500	>14≤19	0.7	47.3
						P721_0050K202_0460ME20	3700	3700	6000	>19≤24	2.6	
232.7	11400/49	300	500	1000	3.5	P721_0100K102_0230ME10	4000	4000	7000	>14≤19	0.7	46.1
						P721_0100K102_0230ME20	3700	3700	6000	>19≤24	2.6	
235.9	4719/20	440	600	1050	4	P721_0070K102_0340ME10	4000	4000	7000	>14≤19	0.6	47.2
245.7	3686/15	440	650	1250	4	P721_0070K102_0350ME10	4000	4000	7000	>14≤19	0.7	47.2
						P721_0070K102_0350ME20	3700	3700	6000	>19≤24	2.6	
277.7	6665/24	440	700	1400	4	P721_0050K202_0560ME10	4000	4000	6500	>14≤19	0.7	47.3
						P721_0100K102_0280ME10	4000	4000	7000	>14≤19	0.7	
280.5	5890/21	300	500	1000	3.5	P721_0100K102_0280ME10	4000	4000	7000	>14≤19	0.7	46.1
						P721_0100K102_0280ME20	3700	3700	6000	>19≤24	2.6	
282.1	2821/10	420	500	890	4	P721_0070K102_0400ME10	4000	4000	7000	>14≤19	0.6	47.2
328.4	2299/7	440	650	1250	4	P721_0070K102_0470ME10	4000	4000	7000	>14≤19	0.6	47.2
351.1	7372/21	300	500	1000	3.5	P721_0100K102_0350ME10	4000	4000	7000	>14≤19	0.7	46.1
						P721_0100K102_0350ME20	3700	3700	6000	>19≤24	2.6	
352.2	35217/100	340	410	720	4	P721_0070K102_0500ME10	4000	4000	7000	>14≤19	0.6	47.2
392.7	1178/3	440	650	1230	4	P721_0070K102_0560ME10	4000	4000	7000	>14≤19	0.6	47.2
469.2	22990/49	300	500	1000	3.5	P721_0100K102_0470ME10	4000	4000	7000	>14≤19	0.6	46.1
490.2	2451/5	440	570	1000	4	P721_0070K102_0700ME10	4000	4000	7000	>14≤19	0.6	47.2
561.0	11780/21	300	500	1000	3.5	P721_0100K102_0560ME10	4000	4000	7000	>14≤19	0.6	46.1

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)





# Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia <sup>4)</sup> J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm				EL 1,2,5,6	EL 3,4			

## P8KX (continued next page)

3.000	582	800	1299	≤6.5	P821_0030KX801VF0010MF	1000	750	2000	48	117.6	83.7
4.000	776	1067	1732	≤5.5	P821_0040KX801VF0010MF	1000	750	2000	48	93.7	110.6
5.000	970	1334	2165	≤5	P821_0050KX801VF0010MF	1000	750	2000	48	86.9	127.9
6.000	582	800	1546	≤6.5	P821_0030KX801VF0020MF	1100	1100	2500	48	59.0	83.7
7.000	1000	1400	2801	≤4.5	P821_0070KX801VF0010MF	1000	750	2000	48	82.2	142.3
8.000	776	1067	2062	≤5.5	P821_0040KX801VF0020MF	1100	1100	2500	48	53.0	110.6
10.00	970	1334	2577	≤5	P821_0050KX801VF0020MF	1100	1100	2500	48	51.3	127.9
12.00	776	1067	2062	≤5.5	P821_0040KX801VF0030MF	1300	1300	3000	48	45.1	110.6
14.00	1000	1400	2801	≤4.5	P821_0070KX801VF0020MF	1100	1100	2500	48	50.1	142.3
15.00	970	1334	2577	≤5	P821_0050KX801VF0030MF	1300	1300	3000	48	44.3	127.9
16.00	800	1200	2400	≤4.5	P821_0080KX801VF0020MF	1100	1100	2500	48	49.8	141.7
20.00	700	1200	2400	≤4	P821_0100KX801VF0020MF	1100	1100	2500	48	49.5	138.8
21.00	1000	1400	2801	≤4.5	P821_0070KX801VF0030MF	1300	1300	3000	48	43.8	142.3
24.00	800	1200	2400	≤4.5	P821_0080KX801VF0030MF	1300	1300	3000	48	43.6	141.7

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

PKX/PK Series: RIGHT ANGLE – Shaft Output

Reducer Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm				EL 1, 2, 3, 4	EL 5, 6			

## P8K (continued next page)

12.00	12/1	600	680	900	4.5	P821_0030K302_0040ME20	2700	2700	4000	>24≤32	11.5	86.5
			890	1760		>32≤38				17.0	87.8	
16.00	16/1	790	900	1200	4	P821_0040K302_0040ME20	2700	2700	4000	>24≤32	10.0	113.3
			1190	2330		>32≤38				15.5	114.6	
20.00	20/1	990	1130	1500	4	P821_0050K302_0040ME20	2700	2700	4000	>24≤32	9.6	130.2
			1480	2900		>32≤38				15.1	131.3	
26.88	215/8	1000	1520	2020	4	P821_0050K302_0054ME20	2700	2700	4000	>24≤32	7.6	131.0
						P821_0050K302_0054ME30				>32≤38	12.9	131.4
28.00	28/1	630	630	840	3.5	P821_0070K202_0040ME10	3000	3000	4500	>14≤19	3.3	128.3
						P821_0070K202_0040ME20				>24≤32	6.7	131.0
						P821_0070K202_0040ME30				>32≤38	12.1	131.4

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

# PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

## P8KX (continued next page)

30.00	700	1200	2400	≤4	P821_0100KX801VF0030MF	1300	1300	3000	48	43.5	138.8
32.00	800	1600	3178	≤4.5	P822_0160KX701VF0020MF	1800	1800	3500	38	15.7	158.0
35.00	1000	1600	3200	≤4.5	P822_0350KX701VF0010MF	1800	1600	3000	38	26.0	167.6
40.00	1000	1600	3200	≤4.5	P822_0200KX701VF0020MF	1800	1800	3500	38	15.6	164.4

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
Nom.	Exact	Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
		Nm	Nm	Nm					EL 1, 2, 3, 4	EL 5, 6			

## P8K (continued next page)

30.00	30/1	1000	1600	2250	4	P821_0050K302_0060ME20	2700	2700	4000	>24≤32	7.8	131.2				
				2900		P821_0050K302_0060ME30				>32≤38			13.3	131.6		
30.55	336/11	690	690	920	3.5	P821_0070K202_0044ME10	3000	3000	4500	>14≤19	3.0	128.8				
				810		1220				2290			P821_0070K202_0044ME20	>24≤32	6.4	131.1
													P821_0070K202_0044ME30	>32≤38	11.7	131.4
36.24	14749/407	860	1290	2720	3.5	P821_0070K202_0052ME20	3000	3000	4500	>24≤32	5.8	131.3				
						P821_0070K202_0052ME30				>32≤38			11.2	131.6		
36.96	2365/64	1000	1600	2770	4	P821_0050K302_0074ME20	2700	2700	4000	>24≤32	6.8	131.4				
						P821_0050K302_0074ME30				>32≤38			12.2	131.6		
40.00	40/1	700	900	1200	3.5	P821_0100K202_0040ME10	3000	3000	4500	>14≤19	3.2	131.9				
			1200	2400		P821_0100K202_0040ME20				>24≤32			6.6	133.3		
						P821_0100K202_0040ME30				>32≤38			11.9	133.5		
42.00	42/1	900	950	1260	3.5	P821_0070K202_0060ME10	3000	3000	4500	>14≤19	2.4	130.2				
			1360	2800		P821_0070K202_0060ME20				>24≤32			5.9	131.5		
						P821_0070K202_0060ME30				>32≤38			11.2	131.6		
46.34	5375/116	1000	1600	3200	4	P821_0050K302_0093ME20	3200	3200	4500	>24≤32	6.0	131.6				
				2900		P821_0050K302_0093ME30				>32≤38			11.4	131.7		
46.78	15953/341	940	1060	1400	3.5	P821_0070K202_0067ME10	3500	3500	5000	>14≤19	1.8	130.5				
			1400	2800		P821_0070K202_0067ME20				>24≤32			5.2	131.5		
						P821_0070K202_0067ME30				>32≤38			10.5	131.7		
49.83	14749/296	960	1400	2800	3.5	P821_0070K202_0071ME20	3000	3000	4500	>24≤32	5.5	131.6				
						P821_0070K202_0071ME30				>32≤38			10.8	131.7		

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations.

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)



# Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

## P8KX (continued next page)

50.00	1000	1600	3200	≤4.5	<a href="#">P822_0250KX701VF0020MF</a>	1800	1800	3500	38	15.3	166.1
56.00	800	1600	3178	≤4.5	<a href="#">P822_0280KX701VF0020MF</a>	1800	1800	3500	38	15.0	162.6
60.00	1000	1600	3200	≤4.5	<a href="#">P822_0200KX701VF0030MF</a>	2100	2100	4000	38	12.8	164.4
64.00	800	1200	2400	≤4.5	<a href="#">P822_0320KX701VF0020MF</a>	1800	1800	3500	38	15.6	156.7

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
		Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
		Nm	Nm	Nm					EL 1, 2, 3, 4			

## P8K (continued next page)

51.77	21070/407	700	1200	2400	3.5	<a href="#">P821_0100K202_0052ME20</a>	3000	3000	4500	>24≤32	5.7	133.5		
						<a href="#">P821_0100K202_0052ME30</a>				>32≤38			11.1	133.6
58.05	1161/20	1000	1310	1740	4	<a href="#">P821_0050K302_0115ME10</a>	3200	3200	4500	>14≤19	2.1	131.1		
			1600	3200		<a href="#">P821_0050K302_0115ME20</a>				>24≤32			5.5	131.7
						<a href="#">P821_0050K302_0115ME30</a>				>32≤38			10.8	131.8
58.78	17458/297	1000	1330	1760	3.5	<a href="#">P821_0070K202_0084ME10</a>	3500	3500	5000	>14≤19	1.5	131.0		
			1400	2800		<a href="#">P821_0070K202_0084ME20</a>				>24≤32			4.9	131.7
						<a href="#">P821_0070K202_0084ME30</a>				>32≤38			10.2	
60.00	60/1	700	1200	1800	3.5	<a href="#">P821_0100K202_0060ME10</a>	3000	3000	4500	>14≤19	2.4	132.9		
				2400		<a href="#">P821_0100K202_0060ME20</a>				>24≤32			5.8	133.6
						<a href="#">P821_0100K202_0060ME30</a>				>32≤38			11.1	
64.33	15953/248	1000	1400	1930	3.5	<a href="#">P821_0070K202_0092ME10</a>	3500	3500	5000	>14≤19	1.6	131.2		
				2800		<a href="#">P821_0070K202_0092ME20</a>				>24≤32			5.0	131.7
						<a href="#">P821_0070K202_0092ME30</a>				>32≤38			10.3	
66.83	22790/341	700	1200	2010	3.5	<a href="#">P821_0100K202_0067ME10</a>	3500	3500	5000	>14≤19	1.8	133.1		
				2400		<a href="#">P821_0100K202_0067ME20</a>				>24≤32			5.2	133.6
						<a href="#">P821_0100K202_0067ME30</a>				>32≤38			10.5	
69.68	7525/108	1000	1570	2090	4	<a href="#">P821_0050K302_0140ME10</a>	3500	3500	5000	>14≤19	1.7	131.3		
			1600	3200		<a href="#">P821_0050K302_0140ME20</a>				>24≤32			5.1	131.8
						<a href="#">P821_0050K302_0140ME30</a>				>32≤38			10.4	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal M <sub>2N</sub> <sup>1)</sup>	Acceleration M <sub>2B</sub>	Peak M <sub>2PEAK</sub> <sup>2)</sup>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

## P8KX (continued next page)

70.00	1000	1600	3200	≤4.5	<a href="#">P822_0350KX701VF0020MF</a>	1800	1800	3500	38	15.0	167.6
75.00	1000	1600	3200	≤4.5	<a href="#">P822_0250KX701VF0030MF</a>	2100	2100	4000	38	12.7	166.1
80.00	800	1600	3178	≤4.5	<a href="#">P822_0400KX701VF0020MF</a>	1800	1800	3500	38	14.9	161.1
84.00	800	1600	3178	≤4.5	<a href="#">P822_0280KX701VF0030MF</a>	2100	2100	4000	38	12.6	162.6

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal M <sub>2N</sub> ≤2000 RPM <sup>1)</sup>	Acceleration M <sub>2B</sub>	Peak M <sub>2PEAK</sub> <sup>2)</sup>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1, 2, 3, 4	EL 5, 6			

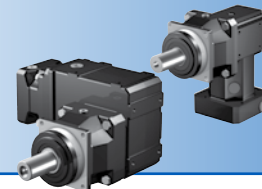
## P8K (continued next page)

70.51	20167/286	1000	1400	2120	3.5	<a href="#">P821_0070K202_0100ME10</a>	3900	3900	5500	>14≤19	1.3	131.3
				2800		<a href="#">P821_0070K202_0100ME20</a>	3700	3700		>24≤32	4.7	131.7
						<a href="#">P821_0070K202_0100ME30</a>	3500	3500		>32≤38	10.0	131.8
80.82	8729/108	1000	1400	2430	3.5	<a href="#">P821_0070K202_0115ME10</a>	3500	3500	5000	>14≤19	1.3	131.4
				2800		<a href="#">P821_0070K202_0115ME20</a>				>24≤32	4.7	131.8
						<a href="#">P821_0070K202_0115ME30</a>				>32≤38	10.0	
83.97	24940/297	700	1200	2400	3.5	<a href="#">P821_0100K202_0084ME10</a>	3500	3500	5000	>14≤19	1.4	133.3
						<a href="#">P821_0100K202_0084ME20</a>				>24≤32	4.8	133.7
						<a href="#">P821_0100K202_0084ME30</a>				>32≤38	10.2	
86.47	7955/92	1000	1600	2600	4	<a href="#">P821_0050K302_0175ME10</a>	3500	3500	5000	>14≤19	1.4	131.5
				3200		<a href="#">P821_0050K302_0175ME20</a>				>24≤32	4.8	131.8
						<a href="#">P821_0050K302_0175ME30</a>				>32≤38	10.1	131.9
88.94	3913/44	1000	1400	2670	3.5	<a href="#">P821_0070K202_0125ME10</a>	3900	3900	5500	>14≤19	1.1	131.5
				2800		<a href="#">P821_0070K202_0125ME20</a>	3700	3700		>24≤32	4.5	131.8
						<a href="#">P821_0070K202_0125ME30</a>	3500	3500		>32≤38	9.8	
91.90	11395/124	700	1200	2400	3.5	<a href="#">P821_0100K202_0092ME10</a>	3500	3500	5000	>14≤19	1.6	133.4
						<a href="#">P821_0100K202_0092ME20</a>				>24≤32	5.0	133.7
						<a href="#">P821_0100K202_0092ME30</a>				>32≤38	10.3	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations.

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)



# Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia <sup>4)</sup> J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

## P8KX (continued next page)

100.0	1000	1600	3200	≤4	<a href="#">P822_0500KX701VF0020MF</a>	1800	1800	3500	38	14.9	166.5
105.0	1000	1600	3200	≤4.5	<a href="#">P822_0350KX701VF0030MF</a>	2100	2100	4000	38	12.6	167.6
120.0	800	1600	3178	≤4.5	<a href="#">P822_0400KX701VF0030MF</a>	2100	2100	4000	38	12.5	161.1

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
		Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous		Cyclic			
		Nm	Nm	Nm			EL 1, 2, 3, 4	EL 5, 6	All			

## P8K (continued next page)

96.96	20167/208	1000	1400	2800	3.5	<a href="#">P821_0070K202_0140ME10</a>	3900	3900	5500	>14≤19	1.2	131.6
						<a href="#">P821_0070K202_0140ME20</a>	3700	3700		>24≤32	4.6	
						<a href="#">P821_0070K202_0140ME30</a>	3500	3500		>32≤38	9.9	
115.5	6235/54	700	1200	2400	3.5	<a href="#">P821_0100K202_0115ME10</a>	3500	3500	5000	>14≤19	1.3	133.5
						<a href="#">P821_0100K202_0115ME20</a>				>24≤32	4.7	
						<a href="#">P821_0100K202_0115ME30</a>				>32≤38	10.0	
116.5	2795/24	1000	1600	3200	4	<a href="#">P821_0050K302_0230ME10</a>	3800	3800	6000	>14≤19	1.1	131.7
						<a href="#">P821_0050K302_0230ME20</a>	3700	3700		>24≤32	4.5	
						<a href="#">P821_0050K302_0230ME30</a>	3500	3500		>32≤38	9.9	
118.0	20769/176	1000	1400	2800	3.5	<a href="#">P821_0070K202_0170ME10</a>	4000	4000	6500	>14≤19	0.9	131.7
						<a href="#">P821_0070K202_0170ME20</a>	3700	3700		>24≤32	4.3	
						<a href="#">P821_0070K202_0170ME30</a>	3500	3500		>32≤38	9.6	
122.3	3913/32	1000	1400	2800	3.5	<a href="#">P821_0070K202_0175ME10</a>	3900	3900	5500	>14≤19	1.0	131.7
						<a href="#">P821_0070K202_0175ME20</a>	3700	3700		>24≤32	4.4	
						<a href="#">P821_0070K202_0175ME30</a>	3500	3500		>32≤38	9.7	
138.5	14405/104	700	1200	2400	3.5	<a href="#">P821_0100K202_0140ME10</a>	3900	3900	5500	>14≤19	1.1	133.6
						<a href="#">P821_0100K202_0140ME20</a>	3700	3700		>24≤32	4.5	
						<a href="#">P821_0100K202_0140ME30</a>	3500	3500		>32≤38	9.9	
139.4	17845/128	1000	1600	3200	4	<a href="#">P821_0050K302_0280ME10</a>	3800	3800	6000	>14≤19	1.0	131.8
				2900		<a href="#">P821_0050K302_0280ME20</a>	3700	3700		>24≤32	4.4	
				<a href="#">P821_0050K302_0280ME30</a>		3500	3500	>32≤38		9.7		

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

## P8KX (continued from previous page)

140.0	1000	1400	2801	≤4	<a href="#">P822_0700KX701VF0020MF</a>	1800	1800	3500	38	14.9	163.9
150.0	1000	1600	3200	≤4	<a href="#">P822_0500KX701VF0030MF</a>	2100	2100	4000	38	12.5	166.5
200.0	700	1200	2400	≤4	<a href="#">P822_1000KX701VF0020MF</a>	1800	1800	3500	38	14.8	148.2
210.0	1000	1400	2801	≤4	<a href="#">P822_0700KX701VF0030MF</a>	2100	2100	4000	38	12.5	163.9
300.0	700	1200	2400	≤4	<a href="#">P822_1000KX701VF0030MF</a>	2100	2100	4000	38	12.5	148.2

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Reducer Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
			Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
			Nm	Nm	Nm					EL 1, 2, 3, 4	EL 5, 6			

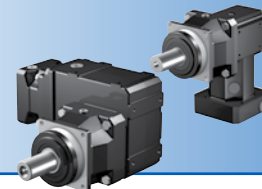
## P8K (continued next page)

142.3	7826/55	1000	1400	2800	3.5	<a href="#">P821_0070K202_0200ME10</a>	4000	4000	6500	>14≤19	0.8	131.7
						<a href="#">P821_0070K202_0200ME20</a>	3700	3700	6000	>19≤24	2.7	131.8
162.3	20769/128	1000	1400	2800	3.5	<a href="#">P821_0070K202_0230ME10</a>	4000	4000	6500	>14≤19	0.9	131.8
						<a href="#">P821_0070K202_0230ME20</a>	3700	3700	6000	>24≤32	4.3	
						<a href="#">P821_0070K202_0230ME30</a>	3500	3500	5000	>32≤38	9.6	
173.7	4515/26	1000	1600	2900	4	<a href="#">P821_0050K302_0350ME10</a>	3800	3800	6000	>14≤19	0.9	131.8
						<a href="#">P821_0050K302_0350ME20</a>	3700	3700		>19≤24	2.8	131.9
174.7	2795/16	700	1200	2400	3.5	<a href="#">P821_0100K202_0175ME10</a>	3900	3900	5500	>14≤19	1.0	133.7
						<a href="#">P821_0100K202_0175ME20</a>	3700	3700		>24≤32	4.4	
						<a href="#">P821_0100K202_0175ME30</a>	3500	3500		5000	>32≤38	
175.9	1935/11	1000	1400	2800	3.5	<a href="#">P821_0070K202_0250ME10</a>	4000	4000	6500	>14≤19	0.8	131.8
						<a href="#">P821_0070K202_0250ME20</a>	3700	3700	6000	>19≤24	2.7	
195.7	3913/20	1000	1400	2800	3.5	<a href="#">P821_0070K202_0280ME10</a>	4000	4000	6500	>14≤19	0.8	131.8
						<a href="#">P821_0070K202_0280ME20</a>	3700	3700	6000	>19≤24	2.7	
231.1	1849/8	1000	1600	2900	4	<a href="#">P821_0050K302_0460ME10</a>	3800	3800	6000	>14≤19	0.8	131.9
						<a href="#">P821_0050K302_0460ME20</a>	3700	3700		>19≤24	2.7	
231.8	14835/64	700	1200	2400	3.5	<a href="#">P821_0100K202_0230ME10</a>	4000	4000	6500	>14≤19	0.9	133.7
						<a href="#">P821_0100K202_0230ME20</a>	3700	3700	6000	>24≤32	4.3	133.8
						<a href="#">P821_0100K202_0230ME30</a>	3500	3500	5000	>32≤38	9.6	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations.

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)



# Selection Data

Reducer Ratio (i)		Output Torque			Backlash	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup>	Input Inertia J <sub>1</sub>	Torsional Stiffness C <sub>2</sub> (per arcmin)
		Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
Nom.	Exact	Nm	Nm	Nm	arcmin		EL 1, 2, 3, 4	EL 5, 6	All	mm	kgcm <sup>2</sup>	Nm

## P8K (continued from previous page)

235.3	12943/55	1000	1260	2220	3.5	P821_0070K202_0340ME10	4000	4000	6500	>14≤19	0.7	131.8
						P821_0070K202_0340ME20	3700	3700	6000	>19≤24	2.6	
241.9	1935/8	1000	1400	2800	3.5	P821_0070K202_0350ME10	4000	4000	6500	>14≤19	0.8	131.8
						P821_0070K202_0350ME20	3700	3700	6000	>19≤24	2.7	
278.5	12255/44	1000	1540	2730	4	P821_0050K302_0560ME10	3800	3800	6000	>14≤19	0.7	131.9
						P821_0050K302_0560ME20	3700	3700		>19≤24	2.6	
279.5	559/2	700	1200	2400	3.5	P821_0100K202_0280ME10	4000	4000	6500	>14≤19	0.8	133.7
						P821_0100K202_0280ME20	3700	3700	6000	>19≤24	2.7	
282.8	9331/33	780	940	1440	3.5	P821_0070K202_0400ME10	4000	4000	6500	>14≤19	0.7	131.8
323.6	12943/40	1000	1400	2800	3.5	P821_0070K202_0460ME10	4000	4000	6500	>14≤19	0.7	131.8
						P821_0070K202_0460ME20	3700	3700	6000	>19≤24	2.6	
345.5	9675/28	700	1200	2400	3.5	P821_0100K202_0350ME10	4000	4000	6500	>14≤19	0.8	133.7
						P821_0100K202_0350ME20	3700	3700	6000	>19≤24	2.7	133.8
353.4	46655/132	650	780	1390	3.5	P821_0070K202_0500ME10	4000	4000	6500	>14≤19	0.6	131.8
388.8	9331/24	1000	1300	1990	3.5	P821_0070K202_0560ME10	4000	4000	6500	>14≤19	0.7	131.8
462.3	1849/4	700	1200	2400	3.5	P821_0100K202_0460ME10	4000	4000	6500	>14≤19	0.7	133.8
						P821_0100K202_0460ME20	3700	3700	6000	>19≤24	2.6	
486.0	46655/96	900	1080	1910	3.5	P821_0070K202_0690ME10	4000	4000	6500	>14≤19	0.6	131.8
555.4	6665/12	700	1200	2400	3.5	P821_0100K202_0560ME10	4000	4000	6500	>14≤19	0.7	133.8

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

## P9KX (continued next page)

32.00	2000	3000	5526	≤4.5	<a href="#">P922_0160KX801VF0020MF</a>	1100	1100	2500	48	53.3	312.8
35.00	2000	3000	6000	≤4.5	<a href="#">P922_0350KX801VF0010MF</a>	1000	750	2000	48	82.4	326.9
40.00	2000	3000	6000	≤4.5	<a href="#">P922_0200KX801VF0020MF</a>	1100	1100	2500	48	53.0	318.5
50.00	2000	3000	6000	≤4.5	<a href="#">P922_0250KX801VF0020MF</a>	1100	1100	2500	48	51.4	323.6
56.00	2000	3000	5526	≤4.5	<a href="#">P922_0280KX801VF0020MF</a>	1100	1100	2500	48	50.3	325.7

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
		Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
		Nm	Nm	Nm					EL 1, 2, 3, 4	EL 5, 6			

## P9K (continued next page)

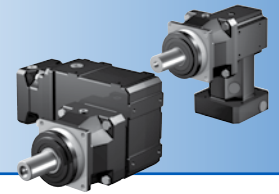
28.00	28/1	2000	2700	5400	3.5	<a href="#">P921_0070K402_0040ME30</a>	2600	2600	3800	>24≤32	18.3	268.5	
						<a href="#">P921_0070K402_0040ME40</a>				>38≤48		42.0	269.3
30.55	336/11	2000	2700	5400	3.5	<a href="#">P921_0070K402_0044ME30</a>	2600	2600	3800	>32≤38	18.7	269.7	
						<a href="#">P921_0070K402_0044ME40</a>				>38≤48		40.5	269.5
37.95	12943/341	2000	2700	5400	3.5	<a href="#">P921_0070K402_0054ME30</a>	2600	2600	3800	>32≤38	16.0	270.1	
						<a href="#">P921_0070K402_0054ME40</a>				>38≤48		37.9	270.0
42.00	42/1	2000	2700	5400	3.5	<a href="#">P921_0070K402_0060ME30</a>	2600	2600	3800	>32≤38	16.7	270.2	
						<a href="#">P921_0070K402_0060ME40</a>				>38≤48		38.6	
47.03	1505/32	2000	2660	3530	3.5	<a href="#">P921_0070K402_0067ME20</a>	3000	3000	4500	>24≤32	8.6	269.5	
			2700	5400		<a href="#">P921_0070K402_0067ME30</a>				>32≤38		14.1	270.4
				<a href="#">P921_0070K402_0067ME40</a>		>38≤48				35.9		270.3	
52.19	12943/248	2000	2700	5400	3.5	<a href="#">P921_0070K402_0075ME30</a>	2600	2600	3800	>32≤38	14.8	270.4	
						<a href="#">P921_0070K402_0075ME40</a>				>38≤48		36.7	
58.64	645/11	2000	2700	4400	3.5	<a href="#">P921_0070K402_0084ME20</a>	3000	3000	4500	>24≤32	7.2	270.0	
				5400		<a href="#">P921_0070K402_0084ME30</a>				>32≤38		12.7	270.5
						<a href="#">P921_0070K402_0084ME40</a>				>38≤48		34.6	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations.

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)





# Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia <sup>4)</sup> J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

## P9KX (continued next page)

60.00	2000	3000	6000	≤4.5	<a href="#">P922_0200KX801VF0030MF</a>	1300	1300	3000	48	45.0	318.5
70.00	2000	3000	6000	≤4.5	<a href="#">P922_0350KX801VF0020MF</a>	1100	1100	2500	48	50.2	326.9
75.00	2000	3000	6000	≤4.5	<a href="#">P922_0250KX801VF0030MF</a>	1300	1300	3000	48	44.4	323.6
80.00	2000	3000	5526	≤4.5	<a href="#">P922_0400KX801VF0020MF</a>	1100	1100	2500	48	49.5	324.5
84.00	2000	3000	5526	≤4.5	<a href="#">P922_0280KX801VF0030MF</a>	1300	1300	3000	48	43.8	325.7

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
		Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
		Nm	Nm	Nm					EL 1, 2, 3, 4			
Nom.	Exact	Nm	Nm	Nm	arcmin				mm	kgcm <sup>2</sup>	Nm	

## P9K (continued next page)

64.67	16555/256	2000	2700	4850	3.5	<a href="#">P921_0070K402_0092ME20</a>	3000	3000	4500	>24≤32	7.8	270.2	
				5400		<a href="#">P921_0070K402_0092ME30</a>				>32≤38	13.2	270.6	
						<a href="#">P921_0070K402_0092ME40</a>				>38≤48	35.1		
70.69	9331/132	2000	2700	5300	3.5	<a href="#">P921_0070K402_0100ME20</a>	3400	3400	5000	>24≤32	6.4	270.3	
				5400		<a href="#">P921_0070K402_0100ME30</a>				>32≤38	11.9	270.6	
						<a href="#">P921_0070K402_0100ME40</a>				>38≤48	33.8		
80.63	645/8	2000	2700	5400	3.5	<a href="#">P921_0070K402_0115ME20</a>	3000	3000	4500	>24≤32	6.7	270.4	
										<a href="#">P921_0070K402_0115ME30</a>	>32≤38	12.2	270.7
										<a href="#">P921_0070K402_0115ME40</a>	>38≤48	34.1	
88.61	2924/33	2000	2700	5400	3.5	<a href="#">P921_0070K402_0125ME20</a>	3400	3400	5000	>24≤32	5.7	270.5	
										<a href="#">P921_0070K402_0125ME30</a>	>32≤38	11.2	270.7
										<a href="#">P921_0070K402_0125ME40</a>	>38≤48	33.1	
97.20	9331/96	2000	2700	5400	3.5	<a href="#">P921_0070K402_0140ME20</a>	3400	3400	5000	>24≤32	6.1	270.5	
										<a href="#">P921_0070K402_0140ME30</a>	>32≤38	11.5	270.7
										<a href="#">P921_0070K402_0140ME40</a>	>38≤48	33.4	

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

## P9KX (continued next page)

100.0	2000	3000	6000	≤4	<a href="#">P922_0500KX801VF0020MF</a>	1100	1100	2500	48	49.5	326.2
105.0	2000	3000	6000	≤4.5	<a href="#">P922_0350KX801VF0030MF</a>	1300	1300	3000	48	43.8	326.9
120.0	2000	3000	5526	≤4.5	<a href="#">P922_0400KX801VF0030MF</a>	1300	1300	3000	48	43.5	324.5
140.0	2000	2700	5399	≤4	<a href="#">P922_0700KX801VF0020MF</a>	1100	1100	2500	48	49.4	314.7

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1, 2, 3, 4	EL 5, 6			

## P9K (continued next page)

118.6	3913/33	2000	2700	5400	3.5	<a href="#">P921_0070K402_0170ME20</a>	3600	3600	5500	>24≤32	5.1	270.6
						<a href="#">P921_0070K402_0170ME30</a>	3500	3500	5000	>32≤38	10.5	270.8
						<a href="#">P921_0070K402_0170ME40</a>	3000	3000	4500	>38≤48	32.4	
121.8	731/6	2000	2700	5400	3.5	<a href="#">P921_0070K402_0175ME20</a>	3400	3400	5000	>24≤32	5.5	270.7
						<a href="#">P921_0070K402_0175ME30</a>				>32≤38	10.9	270.8
						<a href="#">P921_0070K402_0175ME40</a>				>38≤48	32.8	
141.4	9331/66	2000	2700	5400	3.5	<a href="#">P921_0070K402_0200ME20</a>	3600	3600	5500	>24≤32	4.8	270.7
						<a href="#">P921_0070K402_0200ME30</a>	3500	3500	5000	>32≤38	10.1	270.8

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations.

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

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)



# Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia <sup>4)</sup> J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
	Nominal <sup>1)</sup> M <sub>2N</sub>	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

## P9KX (continued from previous page)

150.0	2000	3000	6000	≤4	<a href="#">P922_0500KX801VF0030MF</a>	1300	1300	3000	48	43.5	326.2
200.0	1400	2000	4000	≤4	<a href="#">P922_1000KX801VF0020MF</a>	1100	1100	2500	48	49.4	255.2
210.0	2000	2700	5399	≤4	<a href="#">P922_0700KX801VF0030MF</a>	1300	1300	3000	48	43.5	314.7
300.0	1400	2000	4000	≤4	<a href="#">P922_1000KX801VF0030MF</a>	1300	1300	3000	48	43.5	255.2

<sup>1)</sup> Based on input speed of 2000 RPM. See page 216 for details on torque calculations.

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

\* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Reducer Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D <sup>6</sup> mm	Input Inertia J <sub>1</sub> kgcm <sup>2</sup>	Torsional Stiffness C <sub>2</sub> (per arcmin) Nm
			Nominal <sup>1)</sup> M <sub>2N</sub> ≤2000 RPM	Acceleration M <sub>2B</sub>	Peak <sup>2)</sup> M <sub>2PEAK</sub>			Continuous	Cyclic				
			Nm	Nm	Nm					EL 1, 2, 3, 4			

## P9K (continued next page)

163.0	3913/24	2000	2700	5400	3.5	<a href="#">P921_0070K402_0230ME20</a>	3600	3600	5500	>24≤32	4.9	270.7
						<a href="#">P921_0070K402_0230ME30</a>	3500	3500	5000	>32≤38	10.4	270.8
						<a href="#">P921_0070K402_0230ME40</a>	3000	3000	4500	>38≤48	32.3	
177.0	29197/165	2000	2700	5400	3.5	<a href="#">P921_0070K402_0250ME20</a>	3600	3600	5500	>24≤32	4.6	270.8
						<a href="#">P921_0070K402_0250ME30</a>	3500	3500	5000	>32≤38	9.9	
194.4	9331/48	2000	2700	5400	3.5	<a href="#">P921_0070K402_0280ME20</a>	3600	3600	5500	>24≤32	4.7	270.8
						<a href="#">P921_0070K402_0280ME30</a>	3500	3500	5000	>32≤38	10.0	
235.7	33712/143	2000	2700	5160	3.5	<a href="#">P921_0070K402_0340ME20</a>	3600	3600	5500	>19≤24	2.8	270.8
243.3	29197/120	2000	2700	5400	3.5	<a href="#">P921_0070K402_0350ME20</a>	3600	3600	5500	>24≤32	4.5	270.8
						<a href="#">P921_0070K402_0350ME30</a>	3500	3500	5000	>32≤38	9.8	
283.6	34314/121	2000	2510	4450	3.5	<a href="#">P921_0070K402_0410ME20</a>	3600	3600	5500	>19≤24	2.8	270.8
324.2	4214/13	2000	2700	5400	3.5	<a href="#">P921_0070K402_0460ME20</a>	3600	3600	5500	>19≤24	2.8	270.8
353.0	38829/110	1830	2200	3890	3.5	<a href="#">P921_0070K402_0500ME20</a>	3600	3600	5500	>19≤24	2.7	270.8
389.9	17157/44	2000	2700	5400	3.5	<a href="#">P921_0070K402_0560ME20</a>	3600	3600	5500	>19≤24	2.7	270.8
485.4	38829/80	2000	2700	5400	3.5	<a href="#">P921_0070K402_0690ME20</a>	3600	3600	5500	>19≤24	2.7	270.8

<sup>1)</sup> Based on input speed of 2000 RPM. See page 217 for details on torque calculations..

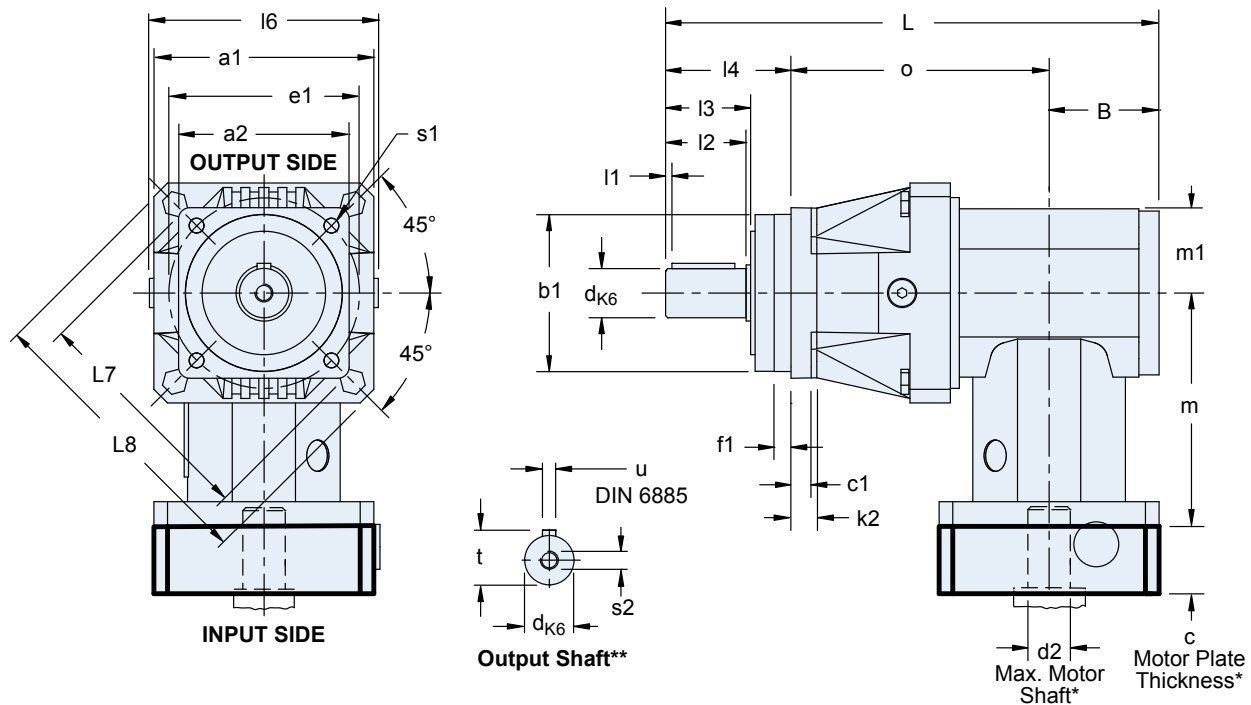
<sup>2)</sup> Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

\* Motor shaft adapter code (shaft diameter max - mm): ME10 (19), ME20 (32), ME30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

# PKX/PK Series: RIGHT ANGLE – Shaft Output

## PKX Series – One Stage Units



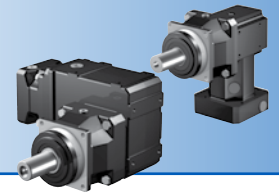
\* See Motor Mounting Plate Option, page 219 for details.  
 \*\* See Output Shaft Options, page 220 for details.

**Table 1 Dimensions (mm)**

Unit	a1	a2	B	b1	h6	c1	d	k6	e1	f1	k2	L	L7	L8
P2_KX	55	55	40	50	+0.000/-0.016	6	12	+0.012/+0.001	63	7.0	–	160	74	80
P3_KX	72	72	40	60	+0.000/-0.019	7	16	+0.012/+0.001	75	7.5	–	184	–	92
P4_KX	98	76	49	70	+0.000/-0.019	9	22	+0.015/+0.002	85	7.5	12	220	103.3	130
P5_KX	115	101	60	90	+0.000/-0.022	10	32	+0.018/+0.002	120	15	14	277	139	149
P7_KX	145	145	74	130	+0.000/-0.025	15	40	+0.018/+0.002	165	3.5	–	343	–	190
P8_KX	190	190	92	160	+0.000/-0.025	15	55	+0.021/+0.002	215	10	–	417	–	250

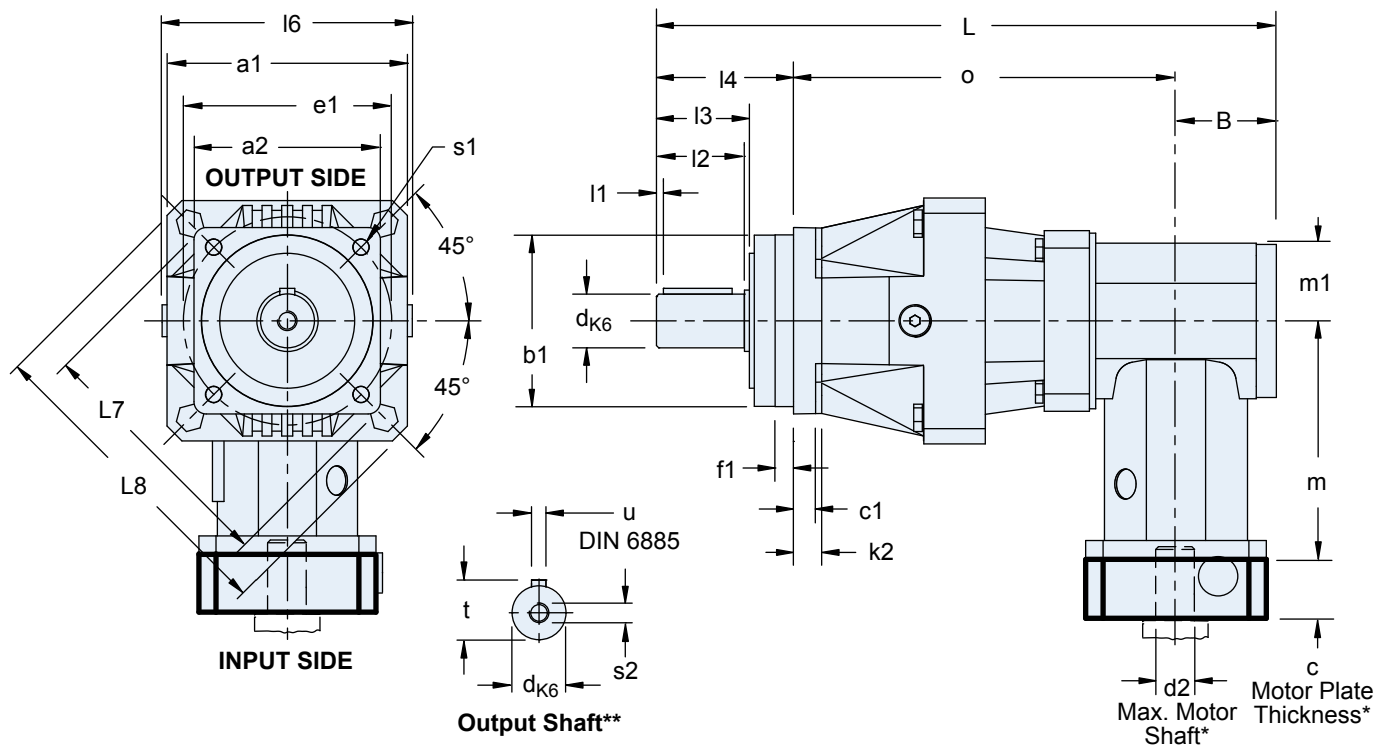
**Table 2 Dimensions (mm)**

Unit	l	l1	l3	l4	l6	m	m1	o	s1	s2	t	u
P2_KX	22	2	24	36	62	95.5	31	84	5.5	M4x13.5	13.5	A4x4x18
P3_KX	28	2	30	48	79	95.5	31	96	5.5	M5x12.5	18	A5x5x22
P4_KX	36	3	38	56	98	104	37.5	115	6.6	M8x19	24.5	A6x6x28
P5_KX	58	3	60	88	121	132	45	129	9	M12x28	35	A10x8x50
P7_KX	82	4	85	112	145	172.5	60	157	11	M16x36	43	A12x8x70
P8_KX	82	6	85	112	190	210	75	213	13.5	M20x42	59	A12x8x70



# Dimensional Data

## PKX Series – Two Stage Units



\* See Motor Mounting Plate Option, page 219 for details.  
 \*\* See Output Shaft Options, page 220 for details.

PKX/PK Series: RIGHT ANGLE – Shaft Output

**Table 1 Dimensions (mm)**

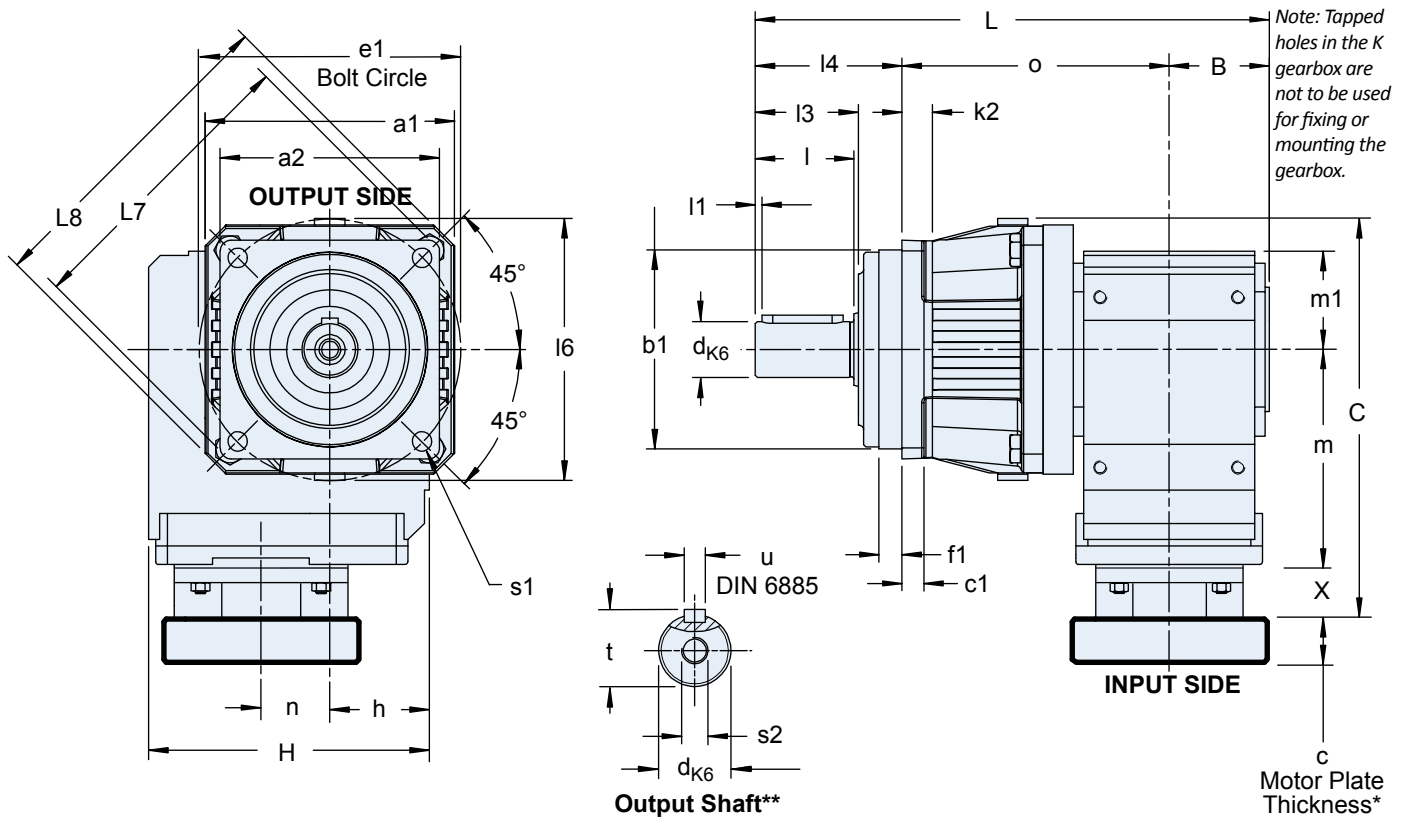
Unit	a1	a2	B	b1	h6	c1	d	k6	e1	f1	k2	L	L7	L8
P2_KX	55	55	40	50	+0.000/-0.016	6	12	+0.012/+0.001	63	7.0	–	192	74	80
P3_KX	72	72	40	60	+0.000/-0.019	7	16	+0.012/+0.001	75	7.5	–	224	92	92
P4_KX	98	76	40	70	+0.000/-0.019	9	22	+0.015/+0.002	85	7.5	12	249.5	103.3	130
P5_KX	115	101	49	90	+0.000/-0.022	10	32	+0.018/+0.002	120	15	14	309.5	139	149
P7_KX	145	145	60	130	+0.000/-0.025	15	40	+0.018/+0.002	165	3.5	–	378	–	190
P8_KX	190	190	74	160	+0.000/-0.025	15	55	+0.021/+0.002	215	10	–	451.5	–	250
P9_KX	225	212	92	180	+0.000/-0.025	17	75	+0.021/+0.002	250	10	22	575	285	300

**Table 2 Dimensions (mm)**

Unit	l	l1	l3	l4	l6	m	m1	o	s1	s2	t	u
P2_KX	22	2	24	36	62	95.5	31	116	5.5	M4x13.5	13.5	A4x4x18
P3_KX	28	2	30	48	79	95.5	31	136	5.5	M5x18	18	A5x5x22
P4_KX	36	3	38	56	98	95.5	31	153.5	6.6	M8x19	24.5	A6x6x28
P5_KX	58	3	60	88	121	104	37.5	172.5	9	M12x28	35	A10x8x50
P7_KX	82	4	85	112	145	132	45	206	11	M16x36	43	A12x8x70
P8_KX	82	6	85	112	190	172.5	60	265.5	13.5	M20x42	59	A16x10x70
P9_KX	105	7	109	143	225	210	75	340	17.5	M20x42	79.5	A20x12x90

# PKX/PK Series: RIGHT ANGLE – Shaft Output

## PK Series – All Units



\* See Motor Mounting Plate Option, page 219 for details.

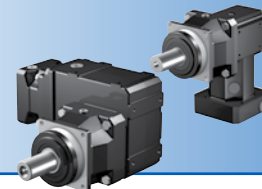
\*\* See Output Shaft Options, page 220 for details.

Table 1 Dimensions (mm)

Unit	a1	a2	B	b1	h6	c1	d	k6	e1	f1	H	h	k2
P5_K1	115	101	56	90	+0.000/-0.022	10	32	+0.018/+0.002	120	15	160	60	14
P7_K1	145	145	56	130	+0.000/-0.025	15	40	+0.018/+0.002	165	3.5	160	60	–
P7_K2	145	145	70	130	+0.000/-0.025	15	40	+0.018/+0.002	165	3.5	190	65	–
P8_K2	190	190	70	160	+0.000/-0.025	15	55	+0.021/+0.002	215	10	190	65	–
P8_K3	190	190	76	160	+0.000/-0.025	15	55	+0.021/+0.002	215	10	213	75	–
P9_K4	225	212	90	180	+0.000/-0.025	17	75	+0.021/+0.002	250	10	240	90	22

Table 2 Dimensions (mm)

Unit	L	L7	L8	l	l1	l3	l4	l6	m1	o	s1	s2	t	u
P5_K1	283	139	149	58	3	60	88	121	60	139	9	M12x28	35	A10x8x50
P7_K1	318	–	190	82	4	85	112	145	60	150	11	M16x36	43	A12x8x70
P7_K2	346	–	190	82	4	85	112	145	65	164	11	M16x36	43	A12x8x70
P8_K2	384.5	–	250	82	6	85	112	190	65	202.5	13.5	M20x42	59	A16x10x70
P8_K3	398	–	250	82	6	85	112	190	75	210	13.5	M20x42	59	A16x10x70
P9_K4	490.5	285	300	105	6	109	143	225	90	257.5	17.5	M20x42	80	A20x12x90



# Dimensional Data

## Motor Mounting Plate

**Table 3 Dimensions (mm)**

Base Right Angle Module	Motor Adapter Code												Wt. lbs.
	ME10			ME20			ME30			ME40			
	C	m	n	C	m	n	C	m	n	C	m	n	
P5_K1	224.5	124	36	238.5	128	36	—	—	—	—	—	—	31
P7_K1	236.5	124	36	250.5	128	36	—	—	—	—	—	—	31
P7_K2	255.5	143	46	269.5	147	46	281.5	149	46	—	—	—	40
P8_K2	278	143	46	292	147	46	307	149	46	—	—	—	40
P8_K3	298	163	52.5	312	167	52.5	324	169	52.5	—	—	—	67
P9_K4	—	—	—	349.5	187	60	361.5	189	60	392.5	192	60	93

**Table 4 Dimensions (mm)**

Motor Adapter Code	Thickness <sup>2)</sup> c Min.	Motor Shaft d2 Max. <sup>1)</sup>	X	Wt. lbs.
ME10	21	19	40	5
ME20	24	32	50	8
ME30	25	38	60	12
ME40	33	48	88	18

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

2) Motor plate maximum thickness (L9) will vary with motor shaft length but will not be less than shown.

PKX/PK Series: RIGHT ANGLE – Shaft Output