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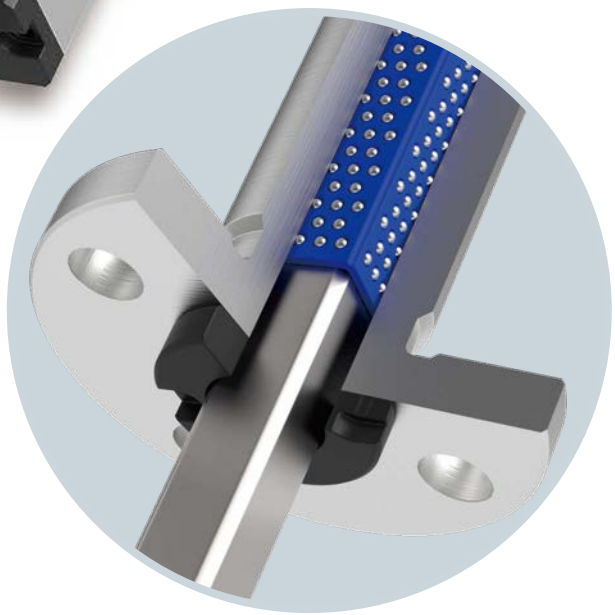
NEW

P B G (Polygon Ball Guide)

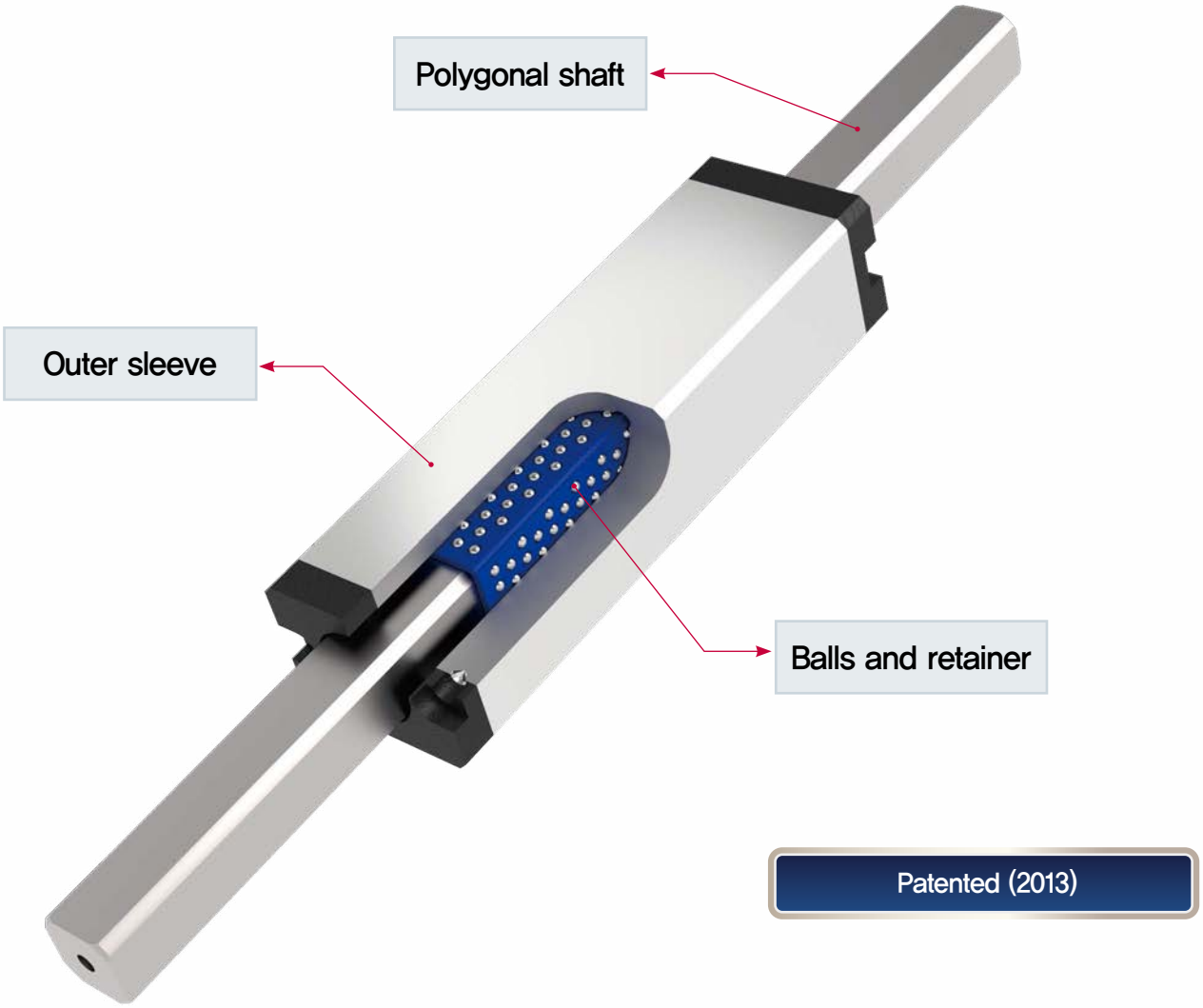
Compact limited-stroke guide with precision balls, polygonal shaft, and outer sleeve



High precision /High speed / No rotation

SAMICK

Structure of miniature stroke type PBG



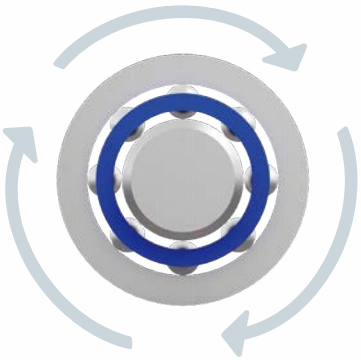
Structure and Features

PBG consists of a polygonal shaft, precision balls, retainer, and outer sleeve. Multiple configurations are available depending on application needs. The polygonal shaft and inner surface of the outer sleeve virtually eliminate rotation.
The high ball count ensures smooth motion and high rigidity with minimal clearance.

1) High precision and rigidity

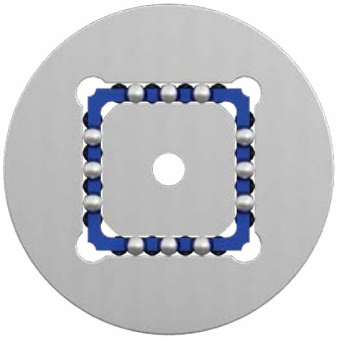
Point contact between the balls and the mirror-polished polygonal shaft and inner surface of the sleeve ensures straightness, smooth motion, and essentially zero rotation. This maintains stability and accuracy by minimizing yawing, rolling, and pitching. The high ball count between the two surfaces also maintains rigidity.

〈 Existing product 〉



Guide can rotate around axis of shaft.

〈 PBG 〉



Polygonal shaft inhibits rotation.

2) Minimal resistance

Point contact between balls and mirror-polished surfaces results in low friction and minimal loss of rolling movement.

3) Stable and fast performance

Polygonal ball arrangement allows a preload of several ㎛ to achieve improved rigidity and straightness. This reduces looseness and incidental vibration and shock, for stable accuracy and smooth motion.

4) Compact design

High number of small-diameter balls in a low-profile retainer keeps the OD small, the design compact, and minimizes weight.

Uses

Ideal for systems transporting small, precision parts, such as: small precision measuring instruments; OA equipment; sorters for semiconductors, LED chips, or small lenses

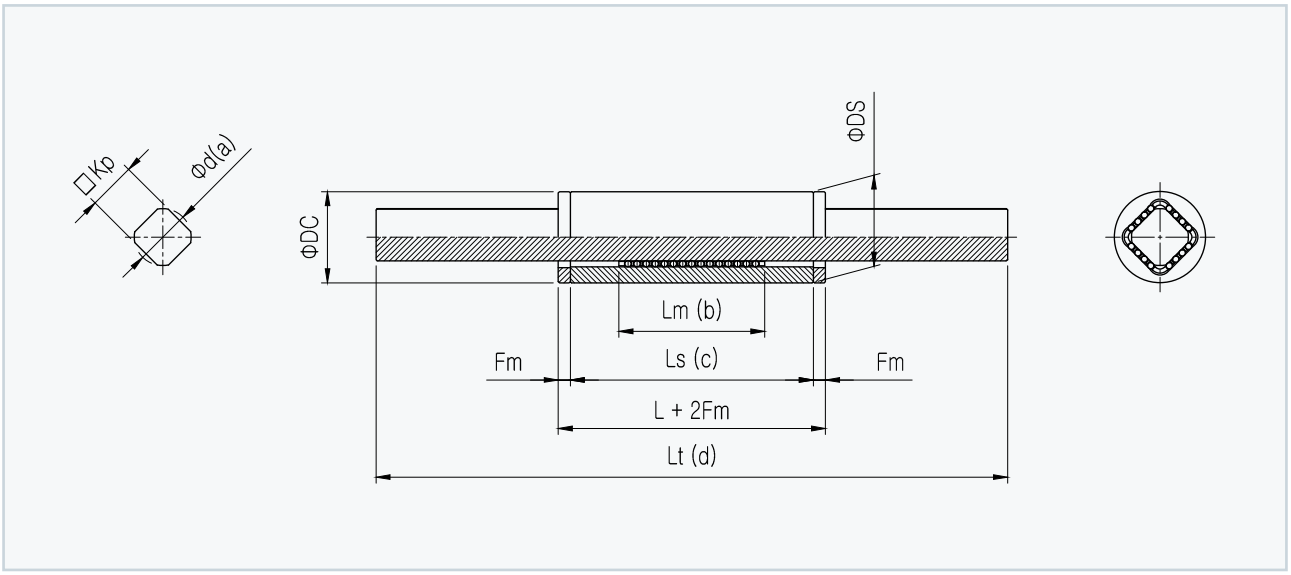
Model number configuration

PBG – (S) (F) (E) – 05 – 22 – 30 – 70

- **(S)** Outer sleeve profile
  - Blank : Standard
  - S : Square
- **(F)** Flange shape
  - Blank : Standard
  - F : Round
  - K : Square
  - H : Oval
- **(E)** Flange position
  - Blank : Standard
  - E : End Flange Type
  - P : Pilot Flange Type
  - M : Middle Flange Type
- **05** Shaft diameter (a)
- **22** Retainer length(b)
- **30** Outer sleeve length (c)
- **70** Shaft length (d)

Specifications and Dimensions

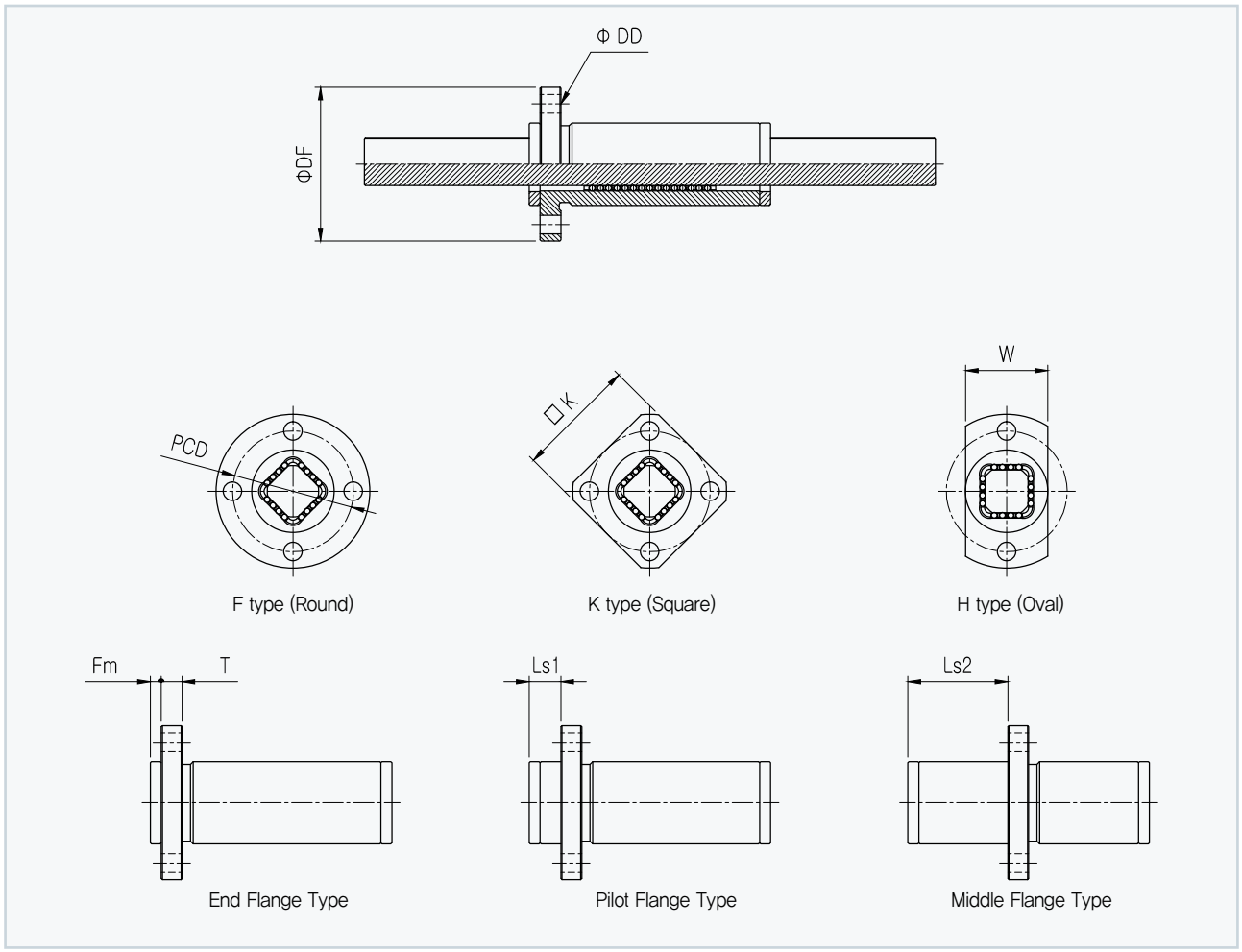
1) PBG – 00 – 00 – 00 – 00



Model	Kp	Φd	ΦDC	ΦDS	Lm	Ls	Fm	Lt	BALL (Φ)	C_o (N)	C (N)
PBG 5	4	5	10	10	22	30	2	70	0.6	250	180
PBG 6	4.7	6	12	12	24	40	2	86	1.0	380	350
PBG 9	7.8	9.4	15	15	24	40	2	104		570	440

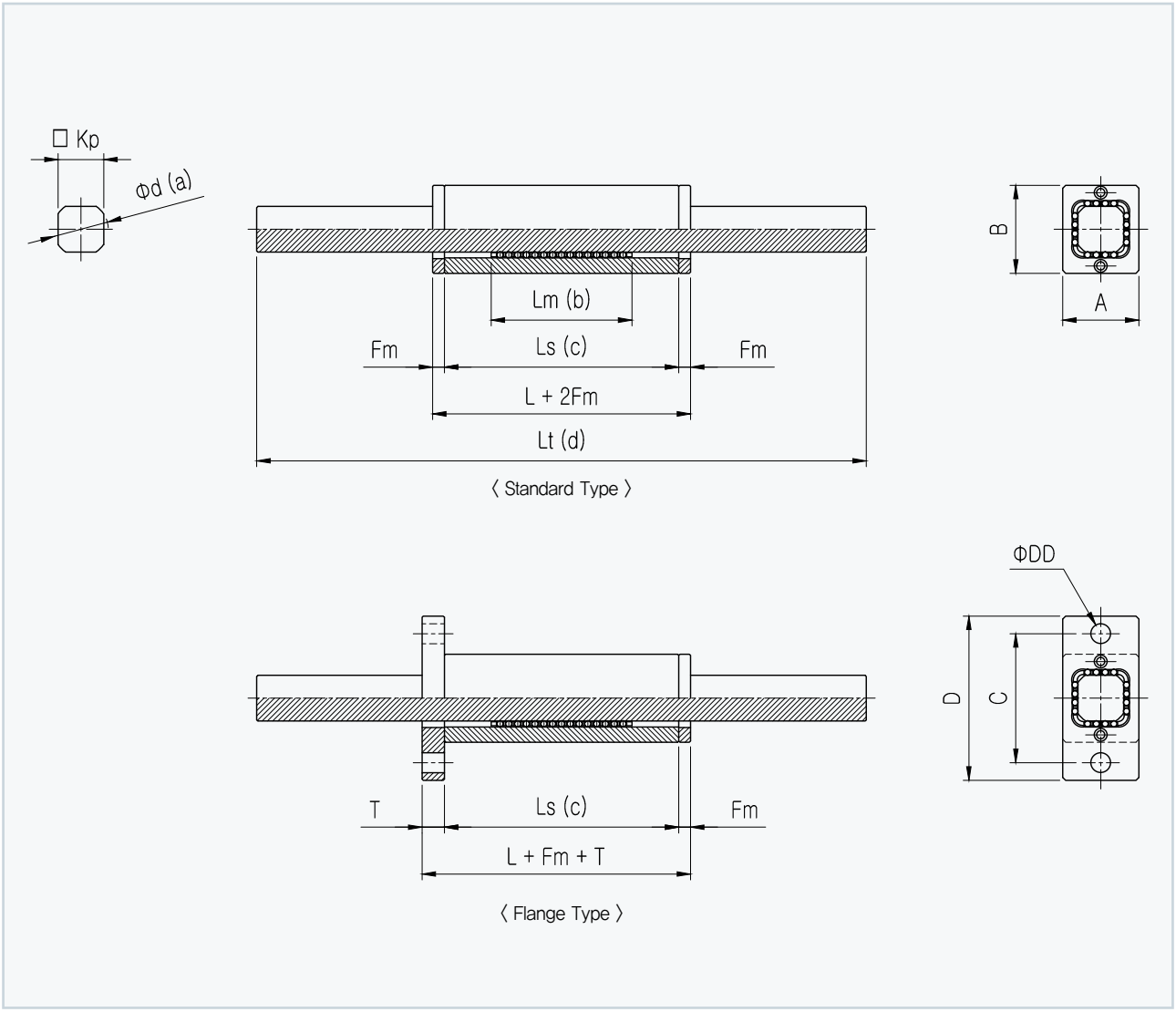
Note) Stroke = (Outer sleeve length(Ls) – Retainer length(Lm)) x 2

2) PBG F(E) – 00 – 00 – 00 – 00



Model			ΦDF	ΦDD	PCD	K	W	T	Ls1	Ls2
Round	Square	Oval								
PBGF 5	PBGK 5	PBGH 5	23	3.4	17	18	10	2.7	–	–
PBGFP 5	PBGKP 5	PBGHP 5	23	3.4	17	18	10	2.7	4.7	–
PBGFM 5	PBGKM 5	PBGHM 5	23	3.4	17	18	10	2.7	–	14.3
PBGF 6	PBGK 6	PBGH 6	25	3.4	19	20	12	2.7	–	–
PBGFP 6	PBGKP 6	PBGHP 6	25	3.4	19	20	12	2.7	4.7	–
PBGFM 6	PBGKM 6	PBGHM 6	25	3.4	19	20	12	2.7	–	19.3
PBGF 9	PBGK 9	PBGH 9	28	3.4	22	22	15	3.8	–	–
PBGFP 9	PBGKP 9	PBGHP 9	28	3.4	22	22	15	3.8	5.8	–
PBGFP 9	PBGKP 9	PBGHP 9	28	3.4	22	22	15	3.8	–	18.2

3) PBG S(F) - 00 - 00 - 00 - 00



Model	Ls	Fm	A	B	C	D	T	ΦDD	Lm	Lt	Φd	Kp	BALL (Φ)	C_o (N)	C (N)
PBGS 5	30	2	8	10	17	23	–	3.4	22	70	5	4	0.6	250	180
PBGSF 5	30	2	8	10	17	23	2.7	3.4	22	70	5	4			
PBGS 6	40	2	10	12	19	25	–	3.4	24	86	6	4.7	1.0	380	350
PBGSF 6	40	2	10	12	19	25	2.7	3.4	24	86	6	4.7			
PBGS 9	40	2	13	15	22	28	–	3.4	24	104	9.4	7.8		570	440
PBGSF 9	40	2	13	15	22	28	3.8	3.4	24	104	9.4	7.8			

Note) Stroke = (Outer sleeve length(Ls) - Retainer length(Lm)) x 2

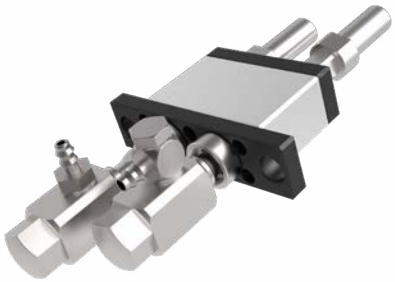
Special order product

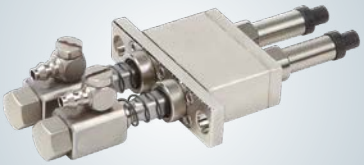
PBG 00 - 00 - 00 - 00 - S

Application example #1

Application example #2

Application example #3





※ SAMICK's in-house engineering and manufacturing allows us to provide convenient design support for our customers.

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