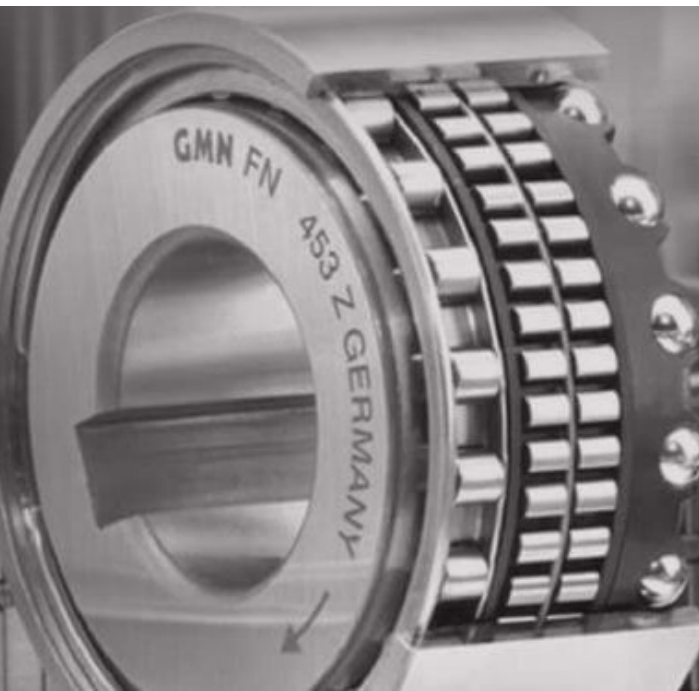




GMN
BEARING USA



Buyer's Guide



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GMN BEARING USA

A Snapshot

GMN Bearing USA, established in 1994, provides GMN precision bearings, sprag clutches and non-contact seals to OEMs, spindle rebuilders and distributors in North America. The firm's onsite mechanical engineers and sales staff specialize in challenging projects in the field of high-precision and high-speed applications, serving markets such as aerospace/defense, medical, industrial manufacturing, agriculture, robotics, recreation and more.

GMN Bearing USA is the only authorized GMN partner in the United States. GMN, located in Nuremberg, Germany, has been manufacturing industrial precision components since 1908.



Rapid Response Times



Expert-level Support



Quality 360°

QUICK PRODUCT GLANCE

Precision Ball Bearings



Angular
Contact
Bearings



Deep Groove
Bearings
(Radials)

One-Way Sprag Clutch



Complete
Units



FE 8000
Series



Ball Bearing
Units



FE 400
Series

Non-Contact Labyrinth Seals



L & M
Labyrinth Seals



CF Seals

Our Products



The GMN Difference

At GMN Bearing USA, “good enough” just doesn’t cut it. That’s why when it comes to our precision products, there is no competition. Here are just a few reasons why:

P4+

GMN knows that for super precision bearings tolerancing is critical and this is especially true on the inner diameter, outer diameter, and width. The fits on the shaft and housing can have large effects on how the bearings perform. GMN marks every P4+ bearing with the exact value of the ID, OD, and W. In addition to that, all GMN P4+ bearings have a circle laser etched on the inner ring that indicates where the high point of the inner ring is. That way multiple bearings can be arranged in a way that evenly spaces the high point markings to help with the balance of the bearing set.

P2 RUNOUTS

People use precision angular contact bearings because of the need for tight manufacturing tolerances that translate to bearing performance and life. Of the manufacturing tolerances, the runouts, or the running tolerances are the most critical values for bearing performance. For this reason, all GMN P4+ angular contact bearings are manufactured with P2 runouts. That means that for the cost of a P4 bearing, GMN’s customers are receiving essentially a P2 precision bearing.

UNIVERSAL MATCHING

Many bearing manufacturers push to have bearing pairs that are optimized for a specific bearing arrangement. They may offer universal matching, but the tolerances are loose enough that it may not be commonly used. However, for GMN, the universal matching tolerances are so tight that GMN’s angular contact bearings can achieve the same benefits of using matched sets from other brands. For this reason, GMN stocks almost exclusively universally matched bearings making it easier for the customer to get a working bearing cross from another brand. It also means that customers don’t need to buy bearings as a pair, triplex set, or quad set. Since the individual bearings are universal, enough individual pieces can be purchased to make up the required set.

NO GREASE FEES

Many brands charge for the time and cost to grease bearings. GMN sees greasing bearings as a service and partnership with our customers. We use a precise method to add just the right amount of grease in a clean and controlled environment to ensure success of the lubrication in the application. For these reasons GMN does not charge to add grease.



Selection Guide: Angular Contact Bearings

HY	KH	A	6002	-2RZ	C	TA	P4+	R	X	D	U	L	S1	T274
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

1 Material	-	Bearings made of bearing steel have no prefix
	M	Bearings made of high temperature steel ¹
	N	Bearings made from high nitrogen steel ¹
2 Series	HY	Balls made of Silicon Nitride, rings made of bearing steel
	S	Standard bearing series, single relief on outer ring
	SM	High speed large ball series, similar but higher speed to S series
	KH	Small ball high speed series, with optional seals
	BNT	Separable bearing, similar to S series performance
3 Direct Lubrication	BHT	Separable bearing, similar to SM series performance
	-	Standard
	A	Oil lubrication hole through outer ring on open side
	AB	Oil lubrication hole through outer ring on closed side
	L	Oil lubrication hole through outer ring on open side, outer ring oil groove with O-ring seals
	LB	Oil lubrication hole through outer ring on closed side, outer ring oil groove with O-ring seals
4 Bearing Size	AG	Grease lubrication hole through outer ring on open side
5 Seals	6002	Designation of dimension series and bore diameter
6 Contact Angle	2RZ	Seals on both sides (For KH series)
	C	15°
	E	25°
7 Cage	18°	Custom contact angle
	TA	Laminated phenolic resin cage guided on outer ring (Standard)
	TXM	Molded plastic cage guided on outer ring, ball retaining ²
8 Precision	P4+	Corresponds to P4S per DIN 628-6, tighter than but similar to P4 (ABEC 7) ³ See P4+ tolerance sheet for further explanation (www.gmnbt.com/downloads.htm)
	P2	European tolerance class P2, similar to ABEC 9 ³
	A9	ABEC 9 per ABMA standards, similar to P2 ³
	HG	GMN high precision according to GMN specification, higher than P4, but lower than UP ³
	UP	GMN ultra precision according to GMN specification, higher than HG, but lower than P2 ³
9 High Point Marking	R	High point mark for radial runout for both inner and outer rings
	R _i	Similar to R, but only for inner ring
10 Grading	R _a	Similar to R, but only for outer ring
	X	Grading of bore and outer diameter ⁴
11 Bearing Sets	-	1 bearing
	D	2 bearings
	T	3 bearings
	Q	4 bearings
12 Matching	U	Universal
	F	Face-to-Face
	B	Back-to-Back
13 Preload	T	Tandem
	L	Light
	M	Medium
	H	Heavy
14 Heat Treatment	V	Special
	S1	Operating temperature up to 200° C ¹
	S2	Operating temperature up to 250° C ¹
15 Lubrication	S3	Operating temperature up to 300° C ¹
	-	No lubrication
	T274	Lubrication identifier, ex. Turmogrease HS L252 (See Grease Codes Sheet)

Don't see the part number you're trying to cross?
Call us! We can help.

1. Available on request
2. Other cages available on request

3. Precision specifications can be found in the GMN Ball Bearing Catalog
4. For more information, please contact GMN USA engineers

Selection Guide: Part Number Cross-Reference Guide

GMN	ISO	Barden	Fafnir	FAG	NSK	NTN	RHP	SKF	SNFA	SNR
S 6180 0 C TA	18	1800 HC		B 71800 CT		7800 C		71800 CD	SEA 10...CE1	
S 61800 E TA		(2)1800 HE		B 71800 ET		7800 AD		71800 ACD	SEA 10...CE3	
:		:		:		:		:	:	
S 61808 C TA		18008 HC		B 71808 CT		7808 C		71808 CD	SEA 40...CE1	
HY S 61808 C TA		C 1808 HC		HCB 71808 CT		5S-7808 C		71808	SEA 40/NS...CE1	
S 6190 0 C TA	19	1900 HC	2MM9300 WICR	B 71900 CT	7900 CT	7900 UC	7900 CT	71900 CD	SEB 10...CE1	71900 C
S 61900 E TA		(2)1900 HE	3MM9300 WICR	B 71900 ET	7900 A5 T	7900 UAD	7900 ET	71900 ACD	SEB 10...CE3	71900 H
:		:	:	:	:	:	:	:	:	:
S 61924 C TA		1924 HC	2MM9324 WICR	B 71924 CT	7924 CT	7924 UC	7924 CT	71924 CD	SEB 120...CE1	71924 C
HY S 61924 C TA		C 1924 HC	2MMC9324 WICR	HCB 71924 CT	7924 SN24 CT	5S-7924 UC	7924 SCT	71924 CD/HC	SEB 120/NS...CE1	CH 71924 C
S 6000 C TA	10	100 HC	2MM9100 WICR	B 7000 CT	7000 CT	7000 UC	7000 CT	7000 CD	EX 10...CE1	7000 C
S 6000 E TA		(2)100 HE	3MM9100 WICR	B 7000 ET	7000 A5 T	7000 UAD	7000 ET	7000 ACD	EX 10...CE3	7000 H
:		:	:	:	:	:	:	:	:	:
S 6024 C TA		124 HC	2MM9124 WICR	B 7024 CT	7024 CT	7024 UC	7024 CT	7024 CD	EX 120...CE1	7024 C
HY S 6024 C TA		C 124 HC	2MMC9124 WICR	HCB 7024 CT	7024 SN24 CT	5S-7024 UC	7024 SCT	7024 CD/HC	EX 120/NS...CE1	CH 7024 C
S 6200 C TA	02	200 HC	2MM200 WICR	B 7200 CT	7200 CT	7200 C	7200 CT	7200 CD	E2 10...CE1	7200 C
S 6200 E TA		(2)200 HE	3MM200 WICR	B 7200 ET	7200 A5 T		7200 ET	7200 ACD	E2 10...CE3	7200 H
:		:	:	:	:	:	:	:	:	:
S 6213 C TA		213 HC	2MM213 WICR	B 7213 CT	7213 CT	7213 C	7213 CT	7213 CD	E2 65...CE1	7213 C
HY S 6213 C TA		C 213 HC	2MMC213 WICR	HCB 7213 CT	7213 SN24 CT	5S-7213 C	7213 SCT	7213 CD/HC	E2 65/NS...CE1	CH 7213 C
SM 619 02 C TA	19			RS 71902 CT				71902 CE	VEB 15...CE1	
:				:				:	:	
SM 61918 C TA				RS 71918 CT				71918 CE	VEB 90...CE1	
HY SM 61918 C TA				HC RS 71918 CT				71918 CE/HC	VEB 90/NS...CE1	
SM 600 0 C TA	10		2MM9100 WOCR	RS 7000 CT				7000 CE	¹ VEX 10...CE1	
:			:	:				:	:	
SM 6014 C TA			2MM9114 WOCR	RS 7014 CT				7014 CE	¹ VEX 70...CE1	
HY SM 6014 C TA			2MMC9114 WOCR	HC RS 7014 CT				7014 CE/HC	¹ VEX 70/NS...CE1	
KH 61900 -2RZ C TA	19			HSS 71900 CT	10 BNR 19 T V1V	2LA-BNS900CLLB		S71900 CB	HB 10/S...CE1	MLE 71900 C
KH 61900-2RZ E TA				HSS 71900 ET	10 BER 19 T V1V	2LA-BNS900ADLLB		S71900 ACB	HB 10/S...CE3	MLE 71900 H
:				:	:	:		:	:	:
KH 61914-2RZ C TA				HSS 71914 CT	70 BNR19 T V1V	2LA-BNS914CLLB		S71914 CB	HB 70/S...CE1	MLE 71914 C
HY KH 61914-2RZ C				HCS 71914 CT	70 BNR19 H T V1V	5S-2LA-BNS914CLLB		SC71914 CB	HB 70/NS/S...CE1	MLE CH 71914 C
KH 6000- 2RZ C TA	10	ZSB 100 C RR		HSS 7000 CT	10 BNR10 T V1V	2LA-BNS000CLLB		S7000 CB	HX 10/S...CE1	MLE 7000 C
KH 6000-2RZ E TA		ZSB 100 E RR		HSS 7000 ET	10 BER10 T V1V	2LA-BNS000ADLLB		S7000 ACB	HX 10/S...CE3	MLE 7000 H
:		:	:	:	:	:	:	:	:	:
KH 6014-2RZ C TA		ZSB 114 C RR		HSS 7014 CT	70 BNR10 T V1V	2LA-BNS014CLLB		S7014 CB	HX 70/S...CE1	MLE 7014 C
HY KH 6014-2RZ C TA		CZSB 114 C RR		HSC 7014 CT	70 BNR10 H T V1V	5S-2LA-BNS014CLLB		SC7014 CB	HX 70/NS/S...CE1	MLE CH 7014 C
GMN	ISO	Barden	Fafnir	FAG	NSK	NTN	RHP	SKF	SNFA	SNR
(D)UL	Light	(D)L	(D)UL	(D)UL	(D)UL	(D)GL	(D)UL	(D)GA	(D)UL	(D)U7
(D)UM	Medium	(D)M	(D)UM	(D)UM	(D)UM	(D)GN	(D)UM	(D)GB	(D)UM	(D)U8
(D)UH	Heavy	(D)H	(D)UH	(D)UH	(D)UH	(D)GM	(D)UH	(D)GC	(D)UH	(D)U9

Selection Guide: Radial Bearings

HY	6002	X	J	P4	C2	R	DF	S1	GLY32
1	2	3	4	5	6	7	8	9	10

1 Material	-	Bearings made of bearing steel have no prefix
	M	Bearings made of high temperature steel ¹
	N	Bearings made from high nitrogen steel ¹
	HY	Balls made of Silicon Nitride, rings made of bearing steel
2 Bearing Size	6002	Designation of dimension series and bore diameter
3 Series/Shields	X	Extra-wide bearing
	Z	Shield on one side
	2Z	Shields on both sides (for matched pairs, shields are on outside faces)
4 Cage	J	Steel ribbon cage, ball guided
	T9H	Crown cage of fiberglass reinforced polyamide, ball guided
	TBH	Crown cage of laminated phenolic resin, inner land guided
	TA	Solid cage of laminated phenolic resin, outer land guided
	TB	Solid cage of laminated phenolic resin, inner land guided
	MA	Solid cage of brass, outer land guided
5 Precision	P4	European tolerance class, similar to ABEC 7 ²
	P2	European tolerance class, similar to ABEC 9 ²
	A7	ABEC 7 per ABMA standards, similar to P4 ²
	A9	ABEC 9 per ABMA standards, similar to P2 ²
	HG	GMN high precision according to GMN specification, higher than P4, but lower than UP ²
6 Internal Clearance	UP	GMN ultra precision according to GMN specification, higher than HG, but lower than P2 ²
	C2	Radial clearance smaller than standard ²
	-	Standard clearance ²
	C3	Radial clearance greater than standard ²
7 High Point Marking	C4	Radial clearance greater than C3 ²
	R	High point mark for radial runout for both inner and outer rings
	R _i	Similar to R, but only for inner ring
8 Bearing Sets	R _a	Similar to R, but only for outer ring
	DF	Face-to-Face arrangement
	DB	Back-to-Back arrangement
9 Heat Treatment	DT	Tandem arrangement
	S1	Operating temperature up to 200° C ¹
	S2	Operating temperature up to 250° C ¹
10 Lubrication	S3	Operating temperature up to 300° C ¹
	-	No lubrication
	GLY32	Lubrication identifier, ex. Asonic GLY 32

1. Available on request
2. Exact specifications can be found in the GMN Ball Bearing Catalog

Don't see the part number you're trying to cross?
Call us! We can help.

Sprag Clutch Selection Guide

FREEWHEEL SELECTION

GMN offers highly effective, long-life freewheel solutions for many applications.

All GMN Freewheel clutches can be used as backstop, indexing or for overrunning clutch applications.

The proper selection of the optimal Freewheel clutch for any application must include many design aspects, such as:

1. Type (features of surrounding construction)
2. Size and torque requirements
3. Mode of operation (suitable spring system)

1. TYPE

Selection of a suitable GMN Clutch can be influenced by existing shaft and housing design characteristics:

The shaft and housing are already hardened to specification: Freewheel-clutch insert elements: GMN series FE

If hardened mating rings are required: Freewheel-clutch insert elements with inner and outer ring: GMN series FR, FRN

If bearing support is required: Ball bearing- / complete freewheel clutch units: GMN series FK, FKN, FKNN, FP, FN

If integrated lubrication and sealing is required:

Pre-lubrication ball bearing- / complete freewheel clutch units: GMN series FPD, FND, RA, FK 2RS, FKN 2RS, FKNN 2RS

2. SIZE AND TORQUE

All GMN clutches are available in many different sizes and performance classes (*Size tables: Pg. 24-55*).

3. MODE OF OPERATION (DESIGN / SPRING SYSTEM)

Selection of a suitable spring system requires particular consideration with respect to the intended mode of operation:

Indexing clutch:

Spring system: meander spring (M)

Backstop:

Spring system: tension spring (Z) or meander spring (M)

Overrunning clutch:

Spring system: tension spring (Z)

CUSTOM SOLUTIONS

The production of a custom GMN Clutch solution is possible on request.



COMPLETE FREEWHEEL CLUTCH UNITS

- + Freewheel clutch insert element
- + Inner and outer ring
- + Ball bearing
- + Roller bearing
- + Seals (optional)



FREEWHEEL CLUTCH INSERT ELEMENTS WITH RINGS

- + Freewheel clutch insert element
- + Inner and outer ring



BALL BEARING FREEWHEEL CLUTCH UNITS

- + Freewheel clutch insert element
- + Inner and outer ring
- + Ball bearing
- + Seals (optional)



FREEWHEEL CLUTCH INSERT ELEMENTS

- + Freewheel clutch insert element

Clutch Part Number Cross Reference - FK Series

GMN	Stieber	Formsprag	Marland	Morse	Renold	Ringspann	Tsubaki	ID	OD	W	Seals	b _{IR}	t _{IR}
	CSK8	CSK8	CSK8		REUK 8 ZZ	ZZ 8		8	22	9	No		
	CSK12	CSK12	CSK12		REUK 12 ZZ	ZZ 6201		12	32	10	No		
	CSK15	CSK15	CSK15	KK 15	REUK 15 ZZ	ZZ 6202	BB 15	15	35	11	No		
FK6203	CSK17	CSK17	CSK17	KK 17	REUK 17 ZZ	ZZ 6203	BB 17	17	40	12	No		
FK6204	CSK20	CSK20	CSK20	KK 20	REUK 20 ZZ	ZZ 6204	BB 20	20	47	14	No		
FK6205	CSK25	CSK25	CSK25	KK 25	REUK 25 ZZ	ZZ 6205	BB 25	25	52	15	No		
FK6206	CSK30	CSK30	CSK30	KK 30	REUK 30 ZZ	ZZ 6206	BB 30	30	62	16	No		
FK6207	CSK35	CSK35	CSK35	KK 35	REUK 35 ZZ	ZZ 6207	BB 35	35	72	17	No		
FK6208								40	80	18	No		
	CSK40	CSK40	CSK40	KK 40	REUK 40 ZZ	ZZ 40	BB 40			22	No		
	CSK8-RS	CSK8-RS				ZZ 8 2RS		8	22	9	1		
	CSK12-2RS	CSK12-2RS				ZZ 12 2RS		12	32	14	2		
	CSK15-2RS	CSK15-2RS		KK 15-2GD		ZZ 15 2RS	BB15-2GD	15	35	16	2		
FK6203-RS								17	40	12	1		
	CSK17-2RS	CSK17-2RS		KK 17-2GD	REUK 17 2RS	ZZ 17 2RS	BB17-2GD			17	2		
FK6204-2RS								20	47	14	2		
	CSK20-2RS	CSK20-2RS		KK 20-2GD	REUK 20 2RS	ZZ 20 2RS	BB20-2GD			19			
FK6205-2RS								25	52	15	2		
	CSK25-2RS	CSK25-2RS		KK 25-2GD	REUK 25 2RS	ZZ 25 2RS	BB25-2GD			20			
FK6206-2RS								30	62	16	2		
	CSK30-2RS	CSK30-2RS		KK 30-2GD	REUK 30 2RS	ZZ 30 2RS	BB30-2GD			21			
FK6207-2RS								35	72	17	2		
	CSK35-2RS	CSK35-2RS		KK 35-2GD		ZZ 35 2RS	BB35-2GD			22			
FK6208-2RS								40	80	18	2		
	CSK40-2RS	CSK40-2RS		KK 40-2GD		ZZ 40 2RS	BB40-2GD			27			
FK6304-2RS								20	52	15	2		
	CSK12P				REUKC 12 ZZ	ZZ 6201 P		12	32	10	No	5	1.2
	CSK15P	CSK15P		KK 15-1K	REUKC 15 ZZ	ZZ 6202 P	BB15-1K-K	15	35	11	No	5	1.2
FKN6203	CSK17P	CSK17P		KK 17-1K	REUKC 17 ZZ	ZZ 6203 P	BB17-1K-K	17	40	12	No	5	1.2
FKN6204	CSK20P	CSK20P		KK 20-1K	REUKC 20 ZZ	ZZ 6204 P	BB20-1K-K	20	47	14	No	6	1.6
FKN6205	CSK25P	CSK25P			REUKC 25 ZZ	ZZ 6205 P		25	52	15	No	8	2
				KK 25-1K			BB25-1K-K	25	52	15	No	8	1.5
FKN6206	CSK30P	CSK30P		KK 30-1K	REUKC 30 ZZ	ZZ 6206 P	BB30-1K-K	30	62	16	No	8	2
FKN6207								35	72	17	No	10	3.3
	CSK35P	CSK35P		KK 35-1K	REUKC 35 ZZ	ZZ 6207 P	BB35-1K-K						2.4
FKN6208								40	80	18	No	12	3.3
	CSK40P	CSK40P		KK 40-1K	REUKC 40 ZZ	ZZ 40 P	BB40-1K-K			22			

Clutch Part Number Cross Reference - FK Series (Cont'd.)

GMN	Stieber	Formsprag	Marland	Morse	Renold	Ringspann	Tsubaki	ID	OD	W	Seals	b _{IR}	t _{IR}	b _{OR}	t _{OR}
	CSK12P-2RS					ZZ 12 P2RS		12	32	14	2	5	1.2		
	CSK15P-2RS			KK 15-2GD 1K		ZZ 15 P2RS	BB15-2GD 1K-K	15	35	16	2	5	1.2		
FKN6203-RS								17	40	12	1	5	1.2		
	CSK17P-2RS			KK 17-2GD 1K		ZZ 17 P2RS	BB17-2GD 1K-K			17	2				
FKN6204-2RS								20	47	14	2	6	1.6		
	CSK20P-2RS	CSK20P-2RS		KK 20-2GD 1K		ZZ 20 P2RS	BB20-2GD 1K-K			19					
FKN6205-2RS								25	52	15	2	8	2		
	CSK25P-2RS	CSK25P-2RS				ZZ 25 P2RS				20			1.5		
FKN6206-2RS				KK 25-2GD 1K			BB25-2GD 1K-K	30	62	16	2	8	2		
	CSK30P-2RS	CSK30P-2RS		KK 30-2GD 1K		ZZ 30 P2RS	BB30-2GD 1K-K			21					
FKN6207-2RS								35	72	17	2	10	1.5		
	CSK35P-2RS			KK 35-2GD 1K		ZZ 35 P2RS	BB35-2GD 1K-K			22			2.4		
FKN6208-2RS								40	80	18	2	12	1.5		
	CSK40P-2RS									27			3.3		
				KK 40-2GD 1K		ZZ 40 P2RS	BB40-2GD								

	CSK15PP	CSK15PP		KK 15-2K	REUKCC 15 ZZ	ZZ 6202 PP	BB15-2K-K	15	35	11	No	5	1.2	2	0.6
FKNN6203	CSK17PP	CSK17PP		KK 17-2K	REUKCC 17 ZZ	ZZ 6203 PP	BB17-2K-K	17	40	12	No	5	1.2	2	1
FKNN6204	CSK20PP	CSK20PP		KK 20-2K	REUKCC 20 ZZ	ZZ 6204 PP	BB20-2K-K	20	47	14	No	6	1.6	3	1.5
FKNN6205	CSK25PP	CSK25PP			REUKCC 25 ZZ	ZZ 6205 PP		25	52	15	No	8	2	6	2
				KK 25-2K			BB25-2K-K						1.5		
FKNN6206	CSK30PP	CSK30PP		KK 30-2K	REUKCC 30 ZZ	ZZ 6206 PP	BB30-2K-K	30	62	16	No	8	2	6	2
	CSK35PP	CSK35PP		KK 35-2K	REUKCC 35 ZZ	ZZ 6207 PP	BB35-2K-K	35	72	17	No	10	2.4	8	2.5
FKNN6208								40	80	18	No	12	3.3	10	3
	CSK40PP	CSK40PP		KK 40-2K	REUKCC 40 ZZ	ZZ 40 PP	BB40-2K-K			22					

FKNN6203-RS								17	40	12	1	5	1.2	2	1
FKNN6204-2RS								20	47	14	2	6	1.6	3	1.5
FKNN6205-2RS								25	52	15	2	8	2	6	2
FKNN6206-2RS								30	62	16	2	8	2	6	2
FKNN6208-2RS								40	80	18	2	12	3.3	10	3
FKNN6304-2RS								20	52	15	2	6	2	6	2

Clutch Part Number Cross Reference - FE 8000 Series (Cont'd.)

GMN	Stieber	Formsprag	Renold	Ringspann	Borg Warner	ID	OD	W
FE 8073 Z19						73.34	90	19
FE 8075 Z25						75	91.66	25
FE 8079 Z25	DC7969C(5C)-N	DC7969C(5C)	REGP 7969C(5C)	BWX 137322	BWX 137322	79.69	96.36	25
FE 8080 Z16						80	96.66	16
FE 8080 Z19					19			
FE 8080 Z25					25			
FE 8083 Z25	DC8334C-N	DC8334	REGP 8334			83.34	100	25
				BWX 138316	BWX 138316	83.6	102.6	25
FE 8087 Z16	DC8729A-N	DC8729A	REGP 8729A			87.29	103.96	16
FE 8093 Z19						93.34	110	19
FE 8100 Z16						100	116.66	16
FE 8100 Z19					19			
FE 8100 Z25					25			
FE 8103 Z16	DC10323A(5C)-N	DC10323A(5C)	REGP 10323A(3C)	BWX 13261A	BWX 13261A	103.23	119.89	16
FE 8103 Z19					19			
FE 8103 Z25					25			
				BWX 13236	BWX 13236	117.39	136.39	16
FES 8123 Z25	DC12334C-N	DC12334C	REGP 12334C			123.34	140	25
FE 8123 Z25						123.88	140.54	25
	DC12388C(11C)	DC12388C(11C)	REGP 12388C(11C)	BWX 133403B	BWX 133403B		142.88	
FE 8126 Z25						126.22	142.88	25
FE 8129 Z25						129.39	146.05	25
FE 8140 Z25						140	156.66	25
FE 8150 Z25						150	166.66	25
FE 8160 Z25						160	176.66	25
FE 8180 Z25						180	196.66	25
FE 8220 Z25						220	236.66	25

For Bearings: Stock List

GMN Bearing USA has one of the largest inventories in North America of precision bearings. However, there can be situations where a bearing is needed that is not in general stock in our North America facility. For many other manufacturers, the only option in this case would be to wait the full production lead time, which isn't a choice if the bearing is needed quickly. For GMN, however, there is a stock list of some common bearings in Germany. Typically, this list does not have large quantities and does not include every bearing size, but there is a chance GMN Bearing USA can bring in the needed bearing without having to wait the full manufacturing lead time. If the bearing is available on the GMN Germany stock list, the lead times are typically less than two months for them to arrive at our Texas facility.

Long term, depending on the repeated need for a specific bearing, it may be a good idea to have a conversation with your GMN Bearing USA representative about steps that can be taken to secure stock in North America.

If you are unable to wait for a bearing to arrive from GMN Germany's stock, there are still other options including substituting your bearing with a close alternative or potentially having a stock bearing reworked. *(See sections on Bearing Alternatives, Rework, and Flexible Purchasing Agreement for more information.)*



Bearing Alternatives

Even though GMN Bearing USA has one of the largest inventories of precision bearings in North America, sometimes an item might not be in stock. That doesn't mean that our customers are out of luck or that they must wait for the bearing to arrive. Oftentimes, there are suitable alternatives in stock.

Here's an overview of the various bearing alternatives that may be available. Your GMN Bearing USA representative will be happy to discuss these options with you.



SERIES

	Load Capacity	Speeds	Price
S	+++	+	+++
SM	++	++	++
KH	+	+++	+

The S series is the standard angular contact bearing designed for high loads and speeds. The SM series is similar to the S series with a slightly increased inner raceway that allows for higher speeds with slightly lower loads. The KH series is a small ball version that is optimized for the highest speeds which also causes it to have the lowest load capacity.

BALL MATERIAL

	Speeds	Dynamic Load Capacity	Static Load Capacity	Life	Price
Steel	+	+	++	+	++
Ceramic	++	++	+	++	+

Bearings with ceramic balls can go up to 25% faster than with steel balls. They also can handle higher loads when the bearing is rotating but not as much when the bearing is stationary. Ceramic balls also have better interaction with steel races than steel balls which enables higher service life.

CONTACT ANGLE

	Radial Load Capacity	Axial Load Capacity	Speeds
C (15° or 17°)	++	+	++
E (25°)	+	++	+

Lower contact angles are better for radial loads but not as good for axial loads. For applications with mostly axial loads, a higher contact angle bearing is better. However, higher contact angle bearings have a lower speed capacity.

CAGE MATERIAL

	Temp	Grease	Oil
TA (Phenolic)	+	+	++
TXM (PEEK)	++	++	+

Phenolic cages are the standard for precision angular contact applications and are a good option for grease or oil up to 120°C operating conditions. GMN's PEEK cages can operate in temperatures up to 250°C and are optimized for grease lubrication. The PEEK cages can be used in oil mist application but the nozzle locations need to be checked to make sure the oil doesn't hit the cage instead of the balls.

PRELOAD

	Rigidity	Load Capacity	Speeds	Life
Light	+	+++	+++	+++
Medium	++	++	++	++
Heavy	+++	+	+	+

Lighter preloads have more capacity for higher application loads and speeds. That also enables them to last longer than heavier preloads. As the preload increases the rigidity will also increase but the available capacity for application loads and speeds decreases.

For Bearings: Rework

If the exact desired bearing is not in stock but GMN Bearing USA does have one that matches everything except the preload, that bearing can be reworked to match what is needed. GMN has a partnership with a facility in the United States that specializes in bearing alteration and is equipped to handle the super high precision machining required to modify a bearing preload. That means that any bearing in stock at our facility can be altered to match the required preload, including custom preload values. (Note: If the reworked preload is less than the original value in stock, due to the rework process, the part number will be removed.)

Our customers have taken advantage of using reworked bearings for many years with great success. This option will prevent having to wait for long production lead times at a minimal cost increase. Lead times for reworked bearings are just a few weeks and can be as short as a few days if expediting shipping to and from the rework facility is desired.

Our Service



Customer Service

GMN Bearing USA is known for two equally important traits: Products produced with extraordinary precision and quality, and Customer Service to match.

What you can expect from GMN Bearing USA:

SPEED

- Impeccable communication: We actually answer the phones and return emails!
- Quick replies to requests for quotes and information – usually within one hour
- Process and ship all in-stock orders same day

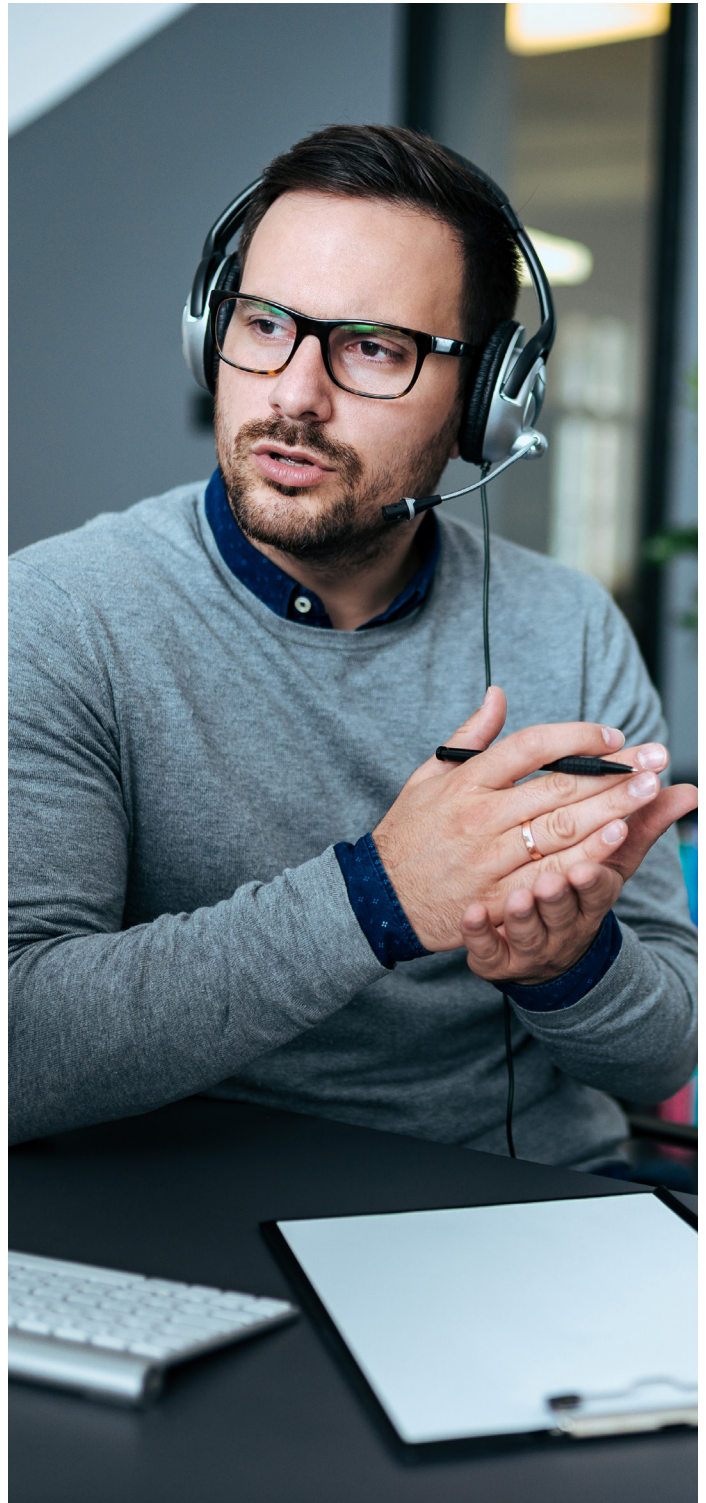
EXPERT-LEVEL SUPPORT

- Dedicated account managers with technical expertise
- Immediate cross-referencing to GMN products from NSK, SKF, FAG, Barden, Formsprag, Stieber, and others
- Optimal processes – PO acknowledgements, order confirmations, shipping notifications with tracking information, and immediate communication of any changes or issues
- Alternatives and options for out-of-stock or unavailable items
- Engineers on staff and immediately accessible for technical support

QUALITY 360°

- Reliable and efficient business processes
- Effective and timely communication
- Creative solutions
- Commitment to continuous improvement

We know that manufacturing the best bearings, clutches, and seals in the world is not enough. Our service must match that level of professionalism and excellence, and that is our commitment to you.



Order Confirmation & Tracking

As a valuable service to our customers, GMN Bearing USA provides an auto-generated email as confirmation of each sales order with a link to tracking information for that order. We refer to this as the “ship/track email,” and it gives you peace of mind that your order has shipped on-time and eliminates the need to request tracking information as you are forced to do with most suppliers.

The process is simple: Provide an email address where you would like to receive the ship-track emails, and we'll do the rest.

On the day we ship your order, our system will automatically send you an email confirming the shipment and providing the tracking information. We implemented this to save our customers from having to call or email to ask for the information—it comes to you automatically.

We have also documented a procedure to help our customers establish “rules” in Outlook that ensure that the ship/track emails won't be re-routed to your Junk folder.

As always, reach out to us, and we will be glad to help.



Strategic Sourcing for Non-GMN Product

GMN Bearing USA is predominately focused on the distribution of super-precision bearings, clutches, and seals manufactured in GMN's manufacturing facility in Germany. This is the central core of our product offering. However, we are sometimes asked by customers for help with sourcing non-GMN products, either because they have experienced some type of supply chain disruption through their existing suppliers or because they value GMN Bearing USA's service and experience (or both!)

We are selective in what we choose to sell and with whom we align ourselves. This enables us—and our customers—to maintain elevated levels of quality in service and products.

GMN Bearing USA has developed a relationship with ORS Bearings over many years, and we

stock ORS radial bearings in our Texas facility alongside our GMN products. We have found ORS to be a strong and reliable partner and a logical complement to the GMN product offering.

Because of our standing in the industry and long-standing relationships with many organizations and suppliers, we are often able to assist with sourcing challenges our customers face. While it is not our business strategy to offer all types and all sizes of bearings (we are highly specialized and focused on what we do best), we do have the occasional opportunity to help our customers with hard-to-find products.

Communication is the key. Reach out to us, and we will always do our best to help.



Technical Expertise

GMN Bearing USA understands that our products are often the critical component to the success of our customers' applications. For this reason, we have Mechanical Engineers on site ready and eager to support in whatever capacity you need. It can be something as simple as a question about orientation or installation, or it can be as involved as designing a new application or running performance calculations.

For a more detailed explanation of GMN's engineering support capabilities, check out our [Bearing Support Toolkit](#).



Business Review

As part of our effort to build collaborative relationships that benefit our customers, GMN Bearing USA offers periodic and flexible business reviews. Not all customers want or need this level of service, but those that do, can benefit in many ways.

The reviews may include:

1. Analysis of purchasing trends
2. Cost-savings recommendations
3. Assistance with forecasting
4. Guidance for timing of orders to ensure an uninterrupted supply chain
5. Industry insight and perspective

This is by no means an exhaustive list of the content and benefits that are available in our business review. Each is tailored to your specific needs.

You have a dedicated Account Manager at GMN Bearing USA and can request a business review or have discussions about your needs at any time.



Flexible Purchasing Agreement

In years past - in an older model of procurement - purchasing and supply chain professionals seeking bearings, clutches, and seals were faced with two options – find a distributor somewhere that has the exact part needed already on their shelf or wait for the needed parts to be manufactured.

Obviously, neither of these options is optimal.

GMN Bearing USA has a dynamic approach to helping you secure your supply chain, and one tool used with great success is our **Flexible Purchasing Agreement (FPA)**.

The FPA allows us to manage the production of the parts you are forecasted to need and have them on the shelf when you are ready to receive them – without impacting your cash flow. It is a new and improved blanket PO concept, with key enhancements for you. Here's how it works:

1. Forecast usage of a GMN part over a period (generally 12 months, but this is a **Flexible Purchasing Agreement**).
2. GMN Bearing USA will work with you to understand the expected frequency of releases—scheduled or simply when you need them. We can also help you avoid potential land mines in the supply chain.
3. Issue a Purchase Order to GMN Bearing USA for the forecasted quantity.
4. We will produce the part and have it ready to release on specified dates or as needed when you notify us to release.

KEY ADVANTAGES:

- Secures your supply chain, so the parts are ready when you need them.
- GMN Bearing USA holds the stock, avoiding costly inventory on your end.
- We will only invoice you when releases are shipped to you. No negative impact on cash flow.
- We will monitor your usage and production lead times so you will know when to place subsequent orders.

Lastly, we understand that forecasting is challenging and circumstances change. If an FPA is put in place for 12 months of forecast usage, but your usage rate slows a bit, perhaps the stock will actually last 15 months. GMN Bearing USA doesn't ship the remaining inventory and issue an invoice at the end of 12 months. Communication is the key. Adjustments to expectations and forecasts can be made (for example, ordering a smaller quantity on the subsequent FPA for the following 12-month period.)



Bottom line: GMN Bearing USA's Flexible Purchasing Agreement gives you the power to keep your supply chain uninterrupted, with no impact on cash flow, without the risk of a mandatory stock dump and invoice at the end of the FPA, and with valuable account management from us to keep your supply chain intact long-term.

Educational Webinars

GMN Bearing USA is firmly committed to providing value to our customers in dynamic ways, and continuing to improve ourselves. One of the ways we do this is through educational webinars.

The webinars are tailored to each customer and their objectives, so that we can be sure to deliver relevant, useful content.

Here are some common situations where a GMN Bearing USA webinar has proven to be helpful:

- An introduction to our products and values for those who may not be entirely familiar with GMN
- In-depth information on a particular segment of our product offering (sprag clutches, for example)

- An overview of business processes and customer service commitments
- An overview of the arsenal of resources and tools available to our customers
- A collaborative framework for mutual strategizing

In general, the webinars typically have about 30 minutes of content and a subsequent discussion period. The content and the dialogue have consistently proven to be mutually beneficial for our customers and ourselves. We welcome the opportunity to engage with you and your teams to help each other be successful.



Resources

Something we pride ourselves here at GMN Bearing USA is our commitment to make it easy to do business. As part of that pledge, we like to create and share resources & guides that help make YOUR job more productive & less stressful.

HIGH PRECISION BEARINGS

- [Ball Bearing Guide](#)
- [eBook: A Guide to Precision Bearings](#)
- [How to Choose a Bearing](#)
- [Understanding Types of Bearing Loads](#)
- [Ball Bearing Fits & Tolerances](#)
- [What is Bearing Preload?](#)
- [Ball Bearing Preload](#)
- [Understanding Bearing Preloads](#)
- [3 Things That Change a Ball Bearing Preload](#)
- [Does Your Application Need Radial Bearings?](#)
- [Radial Ball Bearing vs Angular Contact Bearings](#)
- [Characteristics of an Angular Contact Bearing](#)
- [Combination Options for Angular Contact Bearing Arrangements](#)
- [Ceramic Bearings – The Secret to Successful Machine Performance: Hybrid Ceramic Ball Bearings](#)
- [TA Cage: An Alternative for the TXM Cage for Angular Contact Bearings](#)
- [8 Common Bearing Problems & How You Can Prevent Them](#)
- [Bearing Contact Angle Calculations](#)
- [Thermal Expansion Calculator](#)
- [Press Fit Tolerance Calculator](#)
- [Calculator: Bearing Fault Frequency Analysis](#)
- [The Importance of Shaft & Housing Calculations](#)
- [Internal Clearance for Radial Ball Bearings](#)
- [Find the Right Bearing Tolerance for Mating Parts](#)
- [How to Properly Secure Bearings During & After Installation](#)
- [Bearing Lubricants – Oil or Grease? Which Lubricant is Right for Your Application?](#)
- [How to Choose the Correct Ball Bearing Lubricant](#)
- [How to “Break-In” Your Precision Bearings](#)

SPRAG CLUTCHES

- [How does a Sprag Clutch Work?](#)
- [Ball Bearing Clutch Technology](#)
- [Technology Used for Insert Bearings](#)
- [Three Stopping Options for a One-way Sprag Clutch](#)
- [Sprag Clutch Applications](#)
- [How does a One-Way Clutch Work in Overrunning Applications?](#)
- [Lubricating a Sprag Clutch: Best Practice Guide](#)

SEALS

- [All You Need to Know About Non-Contact Gap Seals](#)
- [What’s the Difference Between Lip Seals & Non-Contact Seals?](#)
- [Mounting Instructions for Labyrinth Seals](#)

INSTALLATION GUIDES

- [Installing Hybrid Bearings](#)
- [Installing Sprag Clutch Elements](#)
- [Installing Angular Contact Bearings](#)
- [Installing CF Seals](#)
- [Installation Guide for Our GMN Sprag Clutch with Mounting Tab](#)
- [Installing Roller Ramp Clutches](#)
- [Installing Deep Groove Bearings](#)
- [How to install a GMN Ball Bearing Sprag Clutch](#)

CASE STUDIES & ARTICLES

- [Winch Case Study – How Our GMN FE 8000 Removed the Spooling Speed Limit in a Hydraulic Winch](#)
- [When “Close Enough Just Won’t Cut It: A Case Study](#)
- [Calling All Rotary Die Cutters](#)



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