

N A T I O N A L

SPHERICAL PLAIN BEARINGS

LOAD SERIES

P R E C I S I O N

B E A R I N G





SPHERICAL PLAIN BEARINGS

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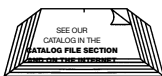
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See our listing in the Thomas Register



<http://www.npb.thomasregister.com>

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GENERAL SERIES INTERCHANGE

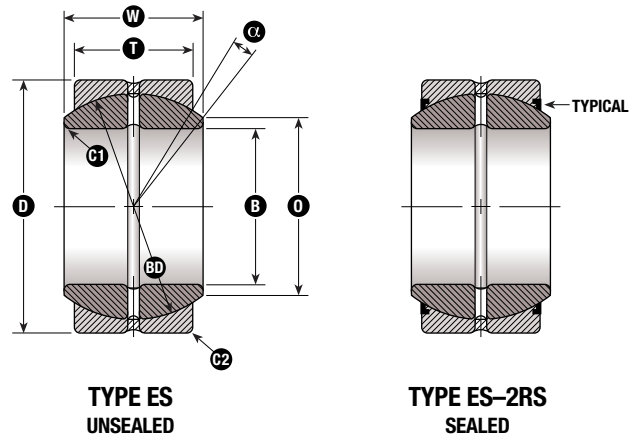
(See pages 3 and 9 for Numeric interchange tables)

	NATIONAL	RBC	SKF	*TORRINGTON	ELGES	IKO
	GEZ()ES	B()-L	GEZ()ES	()SF()	GE()Z0	SBB()
	GEZ()ES-2RS	B()-LSS	GEZ()ES-2RS	()SF()-TT	GE()Z0-2RS	SBB()-2RS
	GEZ()ET-2RS	B()-LFSS	GEZ()TE-2RS	()SFL()	—	—
	GEGZ()ES	BH()-L	GEZH()ES	()SFH()	—	—
	GEGZ()ES-2RS	BH()-LSS	GEZH()ES-2RS	()SFH()-TT	—	—
	GEWZ()ES	B()-EL	GEZM()ES	—	—	—
	GEWZ()ES-2RS	B()-ELSS	GEZM()ES-2RS	—	—	—
	GACZ()S	B()-SA	GAZ()SA	()SBT()	—	—
	NATIONAL	RBC	SKF	*TORRINGTON	ELGES	IKO
	GE()E	—	GE()E	—	GE()D0	GE()E
	GE()ES	MB()	GE()ES	()FS()	GE()D0	GE()ES
	GE()ES-2RS	MB()-SS	GE()ES-2RS	()FS()-TT	GE()D0-2RS	GE()ES-2RS
	GE()ET-2RS	MB()-FSS	GE()TE-2RS	—	GE()JUK-2RS	GE()EC-2RS
	GEG()ES	MBH()	GEH()ES	()FSH()	GE()F0	GE()GS
	GEG()ES-2RS	MBH()-SS	GEH()ES-2RS	()FSH()-TT	GE()F0-2RS	GE()GS-2RS
	GEEW()ES	—	GEG()ES	—	GE()L0	—
	GEEM()ES-2RS	MB()-ESS	GEM()ES-2RS	—	GE()HO-2RS	—
	GAC()S	MB()-SA	—	—	GE()SX	—

*Torrington uses -TT or SS for seal designation

These interchange tables show approximate equivalency. All manufacturers bearings may not be functionally or dimensionally interchangeable.

Load Series UNSEALED & SEALED STANDARD DUTY INCH



GEZ () ES GEZ () ES-2RS

BALL BORE DIAMETER B			PART NUMBER		OUTSIDE DIAMETER D		BALL WIDTH W		RACE WIDTH T		BALL DIA BD	*TILT ANGLE C1	SHLDR DIA O	SHAFT FILLET C1	HSNG FILLET C2	RADIAL CLEARANCE NOT MOUNTED		WT APPROX LBS	RADIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
FRAC	NOM	TOL	WITHOUT SEALS	WITH SEALS ADD-2RS	NOM	TOL	NOM	TOL	NOM	TOL	REF	DEG	REF	MAX	MAX	MAX	MIN		STATIC LBS	DYN LBS	MAX	MIN
1/2	.500	-.0005	GEZ12ES	-	.8750	-.0005	.437	-.0005	.375	-.0005	.719	6	.539	.005	.023	.0059	.0020	.044	9,337	3,156	.8750	.8742
5/8	.625	-.0005	GEZ15ES	-	1.0625	-.0005	.547	-.0005	.469	-.0005	.899	6	.669	.005	.039	.0059	.0020	.077	14,732	4,864	1.0625	1.0617
3/4	.750	-.0005	GEZ19ES	-2RS	1.2500	-.0005	.656	-.0005	.562	-.0005	1.080	6	.823	.011	.039	.0071	.0032	.121	20,927	7,089	1.2500	1.2490
7/8	.875	-.0005	GEZ22ES	-2RS	1.4375	-.0005	.765	-.0005	.656	-.0005	1.258	6	.953	.011	.039	.0071	.0032	.187	28,573	9,565	1.4375	1.4365
1	1.000	-.0005	GEZ25ES	-2RS	1.6250	-.0005	.875	-.0005	.750	-.0005	1.437	6	1.083	.011	.039	.0071	.0032	.265	37,359	12,605	1.6250	1.6240
1 1/4	1.250	-.0005	GEZ31ES	-2RS	2.0000	-.0005	1.093	-.0005	.937	-.0005	1.795	6	1.370	.023	.039	.0071	.0032	.507	58,507	19,468	2.0000	1.9988
1 3/8	1.375	-.0005	GEZ34ES	-2RS	2.1875	-.0006	1.187	-.0005	1.031	-.0005	1.937	5	1.500	.023	.039	.0071	.0032	.772	69,756	23,404	2.1875	2.1863
1 1/2	1.500	-.0005	GEZ38ES	-2RS	2.4375	-.0006	1.312	-.0005	1.125	-.0005	2.155	6	1.630	.023	.039	.0071	.0032	.926	84,379	28,129	2.4375	2.4363
1 3/4	1.750	-.0005	GEZ44ES	-2RS	2.8125	-.0006	1.531	-.0005	1.312	-.0005	2.515	6	1.909	.023	.039	.0071	.0032	1.41	114,752	38,255	2.8125	2.8113
2	2.000	-.0005	GEZ50ES	-2RS	3.1875	-.0006	1.750	-.0005	1.500	-.0005	2.875	6	2.169	.023	.039	.0071	.0032	2.05	150,754	50,408	3.1875	3.1861
2 1/4	2.250	-.0006	GEZ57ES	-2RS	3.5625	-.0008	1.969	-.0005	1.687	-.0005	3.235	6	2.429	.023	.039	.0079	.0039	2.87	191,251	63,002	3.5625	3.5611
2 1/2	2.500	-.0006	GEZ63ES	-2RS	3.9375	-.0008	2.187	-.0005	1.875	-.0005	3.590	6	2.689	.023	.039	.0079	.0039	4.08	234,007	77,629	3.9375	3.9361
2 3/4	2.750	-.0006	GEZ69ES	-2RS	4.3750	-.0008	2.406	-.0005	2.062	-.0005	3.950	6	2.949	.023	.039	.0079	.0039	5.29	285,752	95,628	4.3750	4.3736
3	3.000	-.0006	GEZ76ES	-2RS	4.7500	-.0008	2.625	-.0005	2.250	-.0005	4.312	6	3.205	.023	.039	.0079	.0039	6.84	337,506	112,505	4.7500	4.7484
3 1/4	3.250	-.0008	GEZ82ES	-2RS	5.1250	-.0010	2.844	-.0005	2.437	-.0005	4.675	6	3.465	.023	.039	.0091	.0051	8.38	396,009	131,626	5.1250	5.1234
3 1/2	3.500	-.0008	GEZ88ES	-2RS	5.5000	-.0010	3.062	-.0005	2.625	-.0005	5.040	6	3.724	.023	.039	.0091	.0051	10.58	459,001	153,003	5.5000	5.4984
3 3/4	3.750	-.0008	GEZ95ES	-2RS	5.8750	-.0010	3.281	-.0005	2.812	-.0005	5.390	6	3.984	.023	.039	.0091	.0051	12.79	531,004	175,507	5.8750	5.8734
4	4.000	-.0008	GEZ101ES	-2RS	6.2500	-.0010	3.500	-.0005	3.000	-.0005	5.750	6	4.252	.023	.039	.0091	.0051	15.44	596,256	202,508	6.2500	6.2484
4 1/2	4.500	-.0008	GEZ114ES	-2RS	7.0000	-.0010	3.937	-.0005	3.375	-.0005	6.475	6	4.823	.039	.043	.0091	.0051	21.61	765,002	252,006	7.0000	6.9984
4 3/4	4.750	-.0008	GEZ120ES	-2RS	7.3750	-.0012	4.156	-.0005	3.562	-.0005	6.825	6	5.079	.039	.043	.0091	.0051	25.36	843,754	281,254	7.3750	7.3732
5	5.000	-.0010	GEZ127ES	-2RS	7.7500	-.0012	4.375	-.0005	3.750	-.0005	7.190	6	5.335	.039	.043	.0091	.0051	29.76	933,755	315,009	7.7500	7.7482
6	6.000	-.0010	GEZ152ES	-2RS	8.7500	-.0012	4.750	-.0005	4.125	-.0005	8.156	5	6.339	.039	.043	.0091	.0051	38.59	1,170,002	389,257	8.7500	8.7482

*Seals may reduce tilt angle



Load Series

STANDARD DUTY INCH NUMERICAL INTERCHANGE

To interchange other inch series this table can be used in conjunction with the General Series Interchange table on page 1.

This table provides the numeric bore size conversion between manufacturers.

INCH UNSEALED

NATIONAL	R.B.C.	S K F	TORRINGTON	ELGES	I K O
GEZ12ES	B8-L	GEZ008ES	5SF8	–	SBB 8
GEZ15ES	B10-L	GEZ010ES	6SF10	–	SBB 10
GEZ19ES	B12-L	GEZ012ES	7SF12	GE19Z0	SBB 12
GEZ22ES	B14-L	GEZ014ES	8SF14	GE22Z0	SBB 14
GEZ25ES	B16-L	GEZ100ES	10SF16	GE25Z0	SBB 16
GEZ31ES	B20-L	GEZ104ES	12SF20	GE31Z0	SBB 20
GEZ34ES	B22-L	GEZ106ES	13SF22	GE34Z0	SBB 22
GEZ38ES	B24-L	GEZ108ES	15SF24	GE38Z0	SBB 24
GEZ44ES	B28-L	GEZ112ES	17SF28	GE44Z0	SBB 28
GEZ50ES	B32-L	GEZ200ES	20SF32	GE50Z0	SBB 32
GEZ57ES	B36-L	GEZ204ES	22SF36	GE57Z0	SBB 36
GEZ63ES	B40-L	GEZ208ES	25SF40	GE63Z0	SBB 40
GEZ69ES	B44-L	GEZ212ES	27SF44	GE69Z0	SBB 44
GEZ76ES	B48-L	GEZ300ES	30SF48	GE76Z0	SBB 48
GEZ82ES	B52-L	GEZ304ES	32SF52	–	SBB 52
GEZ88ES	B56-L	GEZ308ES	35SF56	–	SBB 56
GEZ95ES	B60-L	GEZ312ES	37SF60	–	SBB 60
GEZ101ES	B64-L	GEZ400ES	40SF64	–	SBB 64
GEZ114ES	B72-9L	GEZ408ES	45SF72	–	SBB 72
GEZ127ES	B80-9L	GEZ500ES	50SF80	–	SBB 80
GEZ152ES	B96-9L	GEZ600ES	60SF96	–	SBB 96

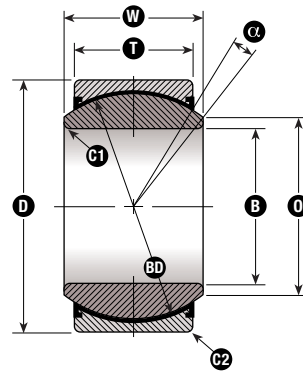
INCH SEALED

NATIONAL	R.B.C.	S K F	TORRINGTON	ELGES	I K O
GEZ25ES-2RS	B16-LSS	GEZ100ES-2RS	10SF16-TT	GE25Z0-2RS	SBB 16-2RS
GEZ31ES-2RS	B20-LSS	GEZ104ES-2RS	12SF20-TT	GE31Z0-2RS	SBB 20-2RS
GEZ34ES-2RS	B22-LSS	GEZ106ES-2RS	13SF22-TT	GE34Z0-2RS	SBB 22-2RS
GEZ38ES-2RS	B24-LSS	GEZ108ES-2RS	15SF24-TT	GE38Z0-2RS	SBB 24-2RS
GEZ44ES-2RS	B28-LSS	GEZ112ES-2RS	17SF28-TT	GE44Z0-2RS	SBB 28-2RS
GEZ50ES-2RS	B32-LSS	GEZ200ES-2RS	20SF32-TT	GE50Z0-2RS	SBB 32-2RS
GEZ57ES-2RS	B36-LSS	GEZ204ES-2RS	22SF36-TT	GE57Z0-2RS	SBB 36-2RS
GEZ63ES-2RS	B40-LSS	GEZ208ES-2RS	25SF40-TT	GE63Z0-2RS	SBB 40-2RS
GEZ69ES-2RS	B44-LSS	GEZ212ES-2RS	27SF44-SS	GE69Z0-2RS	SBB 44-2RS
GEZ76ES-2RS	B48-LSS	GEZ300ES-2RS	30SF48-SS	GE76Z0-2RS	SBB 48-2RS
GEZ82ES-2RS	B52-LSS	GEZ304ES-2RS	32SF52-SS	–	SBB 52-2RS
GEZ88ES-2RS	B56-LSS	GEZ308ES-2RS	35SF56-SS	–	SBB 56-2RS
GEZ95ES-2RS	B60-LSS	GEZ312ES-2RS	37SF60-SS	–	SBB 60-2RS
GEZ101ES-2RS	B64-LSS	GEZ400ES-2RS	40SF64-SS	–	SBB 64-2RS
GEZ114ES-2RS	B72-9LSS	GEZ408ES-2RS	45SBB72-SS	–	SBB 72-2RS
GEZ127ES-2RS	B80-9LSS	GEZ500ES-2RS	50SBB80-SS	–	SBB 80-2RS
GEZ152ES-2RS	B96-9LSS	GEZ600ES-2RS	60SBB96-SS	–	SBB 96-2RS



These interchange tables show approximate equivalency. All manufacturers bearings may not be functionally or dimensionally interchangeable.

Load Series
SEALED
SELF LUBRICATING INCH



TYPE ET-2RS
SEALED

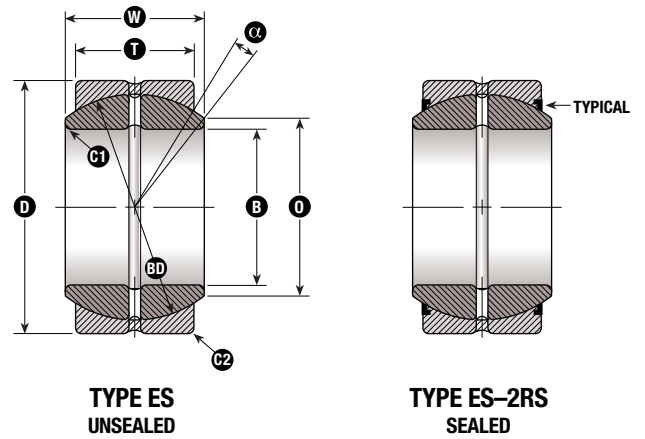
GEZ()ET-2RS

BALL BORE DIAMETER B			PART NUMBER WITH SEALS	OUTSIDE DIAMETER D		BALL WIDTH W		RACE WIDTH T		BALL DIA BD	TILT ANGLE C	SHLDR DIA O	SHAFT FILLET C1	HSNG FILLET C2	RADIAL CLEARANCE NOT MOUNTED		WT APPROX LBS	RADIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
FRAC	NOM	TOL		NOM	TOL	NOM	TOL	NOM	TOL						MAX	MIN		STATIC LBS	DYN LBS	MAX	MIN
3/4	.750	-.0005	GEZ19ET-2RS	1.2500	-.0005	.656	-.005	.562	-.005	1.080	6	.823	.011	.039	.0010	-	.121	20,927	10,465	1.2500	1.2490
1	1.000	-.0005	GEZ25ET-2RS	1.6250	-.0005	.875	-.005	.750	-.005	1.437	6	1.083	.011	.039	.0010	-	.265	37,359	18,680	1.6250	1.6240
1 1/4	1.250	-.0005	GEZ31ET-2RS	2.0000	-.0005	1.093	-.005	.937	-.005	1.795	6	1.370	.023	.039	.0012	-	.507	58,507	29,030	2.0000	1.9988
1 3/8	1.375	-.0005	GEZ34ET-2RS	2.1875	-.0006	1.187	-.005	1.031	-.005	1.937	5	1.500	.023	.039	.0012	-	.772	69,756	35,120	2.1875	2.1863
1 1/2	1.500	-.0005	GEZ38ET-2RS	2.4375	-.0006	1.312	-.005	1.125	-.005	2.155	6	1.630	.023	.039	.0012	-	.926	84,379	41,860	2.4375	2.4363
1 3/4	1.750	-.0005	GEZ44ET-2RS	2.8125	-.0006	1.531	-.005	1.312	-.005	2.515	6	1.909	.023	.039	.0012	-	1.41	114,752	57,380	2.8125	2.8113
2	2.000	-.0005	GEZ50ET-2RS	3.1875	-.0006	1.750	-.005	1.500	-.005	2.875	6	2.169	.023	.039	.0014	-	2.05	150,754	75,380	3.1875	3.1861
2 1/4	2.250	-.0006	GEZ57ET-2RS	3.5625	-.0008	1.969	-.005	1.687	-.005	3.235	6	2.429	.023	.039	.0014	-	2.87	191,251	95,630	3.5625	3.5611
2 1/2	2.500	-.0006	GEZ63ET-2RS	3.9375	-.0008	2.187	-.005	1.875	-.005	3.590	6	2.689	.023	.039	.0014	-	4.08	234,007	117,010	3.9375	3.9361
2 3/4	2.750	-.0006	GEZ69ET-2RS	4.3750	-.0008	2.406	-.005	2.062	-.005	3.950	6	2.949	.023	.039	.0014	-	5.29	285,752	141,755	4.3750	4.3736
3	3.000	-.0006	GEZ76ET-2RS	4.7500	-.0008	2.625	-.005	2.250	-.005	4.312	6	3.205	.023	.039	.0014	-	6.84	337,506	168,755	4.7500	4.7484
3 1/4	3.250	-.0008	GEZ82ET-2RS	5.1250	-.0010	2.844	-.005	2.437	-.005	4.675	6	3.465	.023	.039	.0016	-	8.38	396,009	198,010	5.1250	5.1234
3 1/2	3.500	-.0008	GEZ88ET-2RS	5.5000	-.0010	3.062	-.005	2.625	-.005	5.040	6	3.724	.023	.039	.0016	-	10.58	459,001	229,550	5.5000	5.4984
3 3/4	3.750	-.0008	GEZ95ET-2RS	5.8750	-.0010	3.281	-.005	2.812	-.005	5.390	6	3.984	.023	.039	.0016	-	12.79	531,004	265,550	5.8750	5.8734
4	4.000	-.0008	GEZ101ET-2RS	6.2500	-.0010	3.500	-.005	3.000	-.005	5.750	6	4.252	.023	.039	.0065	.0033	15.44	596,256	301,550	6.2500	6.2484
4 1/2	4.500	-.0008	GEZ114ET-2RS	7.0000	-.0010	3.937	-.005	3.375	-.005	6.475	6	4.823	.039	.043	.0065	.0033	21.61	765,002	382,510	7.0000	6.9984
4 3/4	4.750	-.0008	GEZ120ET-2RS	7.3750	-.0012	4.156	-.005	3.562	-.005	6.825	6	5.079	.039	.043	.0065	.0033	25.36	843,754	427,510	7.3750	7.3732
5	5.000	-.0010	GEZ127ET-2RS	7.7500	-.0012	4.375	-.005	3.750	-.005	7.190	6	5.335	.039	.043	.0065	.0033	29.76	933,755	468,050	7.7500	7.7482
6	6.000	-.0010	GEZ152ET-2RS	8.7500	.0012	4.750	-.005	4.125	-.005	8.156	5	6.339	.039	.043	.0076	.0039	38.59	1,170,002	585,050	8.7500	8.7482



Load Series UNSEALED AND SEALED HEAVY DUTY INCH

GEGZ()ES GEGZ()ES-2RS

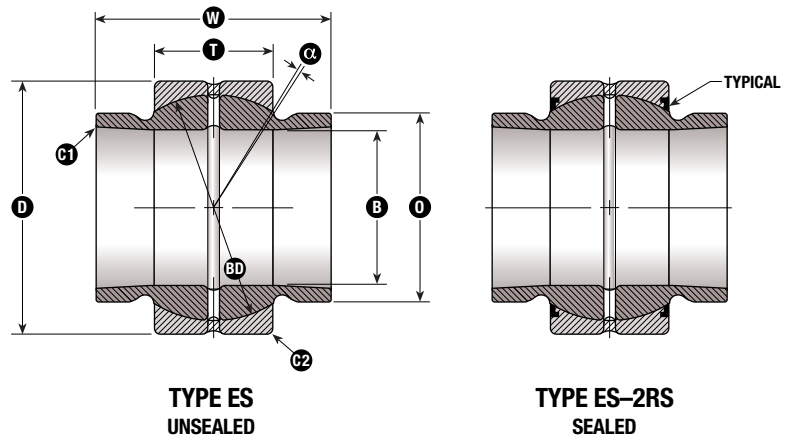


BALL BORE DIAMETER B			PART NUMBER		OUTSIDE DIAMETER D		BALL WIDTH W		RACE WIDTH T		BALL DIA B BD	*TILT ANGLE α	SHLDR DIA O	SHAFT FILLET C1	HSNG FILLET C2	RADIAL CLEARANCE NOT MOUNTED		WT APPROX LBS	RADIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
FRAC	NOM	TOL	WITHOUT SEALS	WITH SEALS ADD-2RS	NOM	TOL	NOM	TOL	NOM	TOL	REF	DEG	REF	MAX	MAX	MAX	MIN		STATIC LBS	DYN LBS	MAX	MIN
1 1/4	1.2500	-.0005	GEGZ31ES	-2RS	2.4375	-.0006	1.390	-.005	1.125	-.005	2.155	8	1.425	.039	.039	.0071	.0032	1.18	84,377	28,127	2.4375	2.4363
1 1/2	1.5000	-.0005	GEGZ38ES	-2RS	2.8125	-.0006	1.580	-.005	1.312	-.005	2.515	7	1.685	.039	.039	.0071	.0032	1.76	114,755	38,257	2.8125	2.8113
1 3/4	1.7500	-.0005	GEGZ44ES	-2RS	3.1875	-.0006	1.820	-.005	1.500	-.005	2.875	7	2.004	.059	.039	.0071	.0032	2.52	150,758	50,406	3.1875	3.1861
2	2.0000	-.0005	GEGZ50ES	-2RS	3.5625	-.0008	2.070	-.005	1.687	-.005	3.235	8	2.264	.059	.039	.0079	.0039	3.49	191,259	63,003	3.5625	3.5611
2 1/4	2.2500	-.0006	GEGZ57ES	-2RS	3.9375	-.0008	2.318	-.005	1.875	-.005	3.590	8	2.524	.059	.039	.0079	.0039	4.67	234,005	77,628	3.9375	3.9361
2 1/2	2.5000	-.0006	GEGZ63ES	-2RS	4.3750	-.0008	2.545	-.005	2.062	-.005	3.950	8	2.835	.079	.039	.0079	.0039	6.32	285,759	95,626	4.3750	4.3736
2 3/4	2.7500	-.0006	GEGZ69ES	-2RS	4.7500	-.0008	2.790	-.005	2.250	-.005	4.312	8	3.094	.079	.039	.0079	.0039	8.04	337,501	112,507	4.7500	4.7484
3	3.0000	-.0006	GEGZ76ES	-2RS	5.1250	-.0010	3.022	-.005	2.437	-.005	4.675	8	3.350	.079	.039	.0091	.0051	10.03	396,003	131,628	5.1250	5.1234
3 1/4	3.2500	-.0008	GEGZ82ES	-2RS	5.5000	-.0010	3.265	-.005	2.625	-.005	5.040	9	3.650	.079	.039	.0091	.0051	12.33	459,006	153,005	5.5000	5.4984
3 1/2	3.5000	-.0008	GEGZ88ES	-2RS	5.8750	-.0010	3.560	-.005	2.812	-.005	5.390	9	3.909	.079	.039	.0091	.0051	14.99	531,009	175,501	5.8750	5.8734
3 3/4	3.7500	-.0008	GEGZ95ES	-2RS	6.2500	-.0010	3.738	-.005	3.000	-.005	5.750	9	4.165	.079	.039	.0091	.0051	17.90	596,253	202,501	6.2500	6.2484
4	4.0000	-.0008	GEGZ101ES	-2RS	7.0000	-.0010	4.225	-.005	3.375	-.005	6.475	9	4.449	.079	.043	.0091	.0051	26.90	765,004	252,005	7.0000	6.9984
4 1/2	4.5000	-.0008	GEGZ114ES	-2RS	7.7500	-.0012	4.690	-.005	3.750	-.005	7.190	9	4.961	.079	.043	.0091	.0051	36.00	933,759	315,003	7.7500	7.7482
5	5.5000	-.0010	GEGZ127ES	-2RS	8.7500	-.0012	4.950	-.005	4.125	-.005	8.156	7	5.984	.079	.043	.0091	.0051	45.31	1,170,005	389,259	8.7500	8.7482

*Seals may reduce tilt angle



Load Series
UNSEALED & SEALED
STANDARD DUTY INCH
EXTENDED INNER RACE



GEWZ ()ES
GEWZ ()ES-2RS

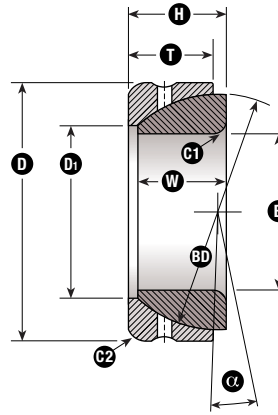
BALL BORE DIAMETER B			PART NUMBER		OUTSIDE DIAMETER D		BALL WIDTH W		RACE WIDTH T		BALL DIA BD	*TILT ANGLE α	SHLDR DIA D	SHAFT FILLET C1	HSNG FILLET C2	RADIAL CLEARANCE NOT MOUNTED		WT APPROX LBS	RADIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
FRAC	NOM	TOL	WITHOUT SEALS	WITH SEALS ADD-2RS	NOM	TOL	NOM	TOL	NOM	TOL	REF	DEG	REF	MAX	MAX	MAX	MIN		STATIC LBS	DYN LBS	MAX	MIN
1/2	.500	-.0005	GEWZ12ES	-	.8750	-.0005	.750	-.010	.375	-.005	.719	9	.563	.012	.024	.0059	.0020	.051	9337	3,152	.8750	.8742
5/8	.625	-.0005	GEWZ15ES	-	1.0625	-.0005	.937	-.010	.469	-.005	.899	9	.724	.024	.039	.0059	.0020	.090	14,732	4,865	1.0625	1.0617
3/4	.750	-.0005	GEWZ19ES	-	1.2500	-.0005	1.125	-.010	.562	-.005	1.080	9	.854	.024	.039	.0071	.0032	.150	20,923	7,089	1.2500	1.2490
7/8	.875	-.0005	GEWZ22ES	-	1.4375	-.0005	1.312	-.010	.656	-.005	1.258	9	.980	.024	.039	.0071	.0032	.231	28,576	9,569	1.4375	1.4365
1	1.000	-.0005	GEWZ25ES	-2RS	1.6250	-.0005	1.500	-.010	.750	-.005	1.437	9	1.110	.024	.039	.0071	.0032	.335	37,351	12,604	1.6250	1.6240
1 1/4	1.250	-.0005	GEWZ31ES	-2RS	2.0000	-.0005	1.875	-.010	.937	-.005	1.795	9	1.409	.039	.039	.0071	.0032	.628	58,506	19,462	2.0000	1.9988
1 3/8	1.375	-.0005	GEWZ34ES	-2RS	2.1875	-.0006	2.062	-.010	1.031	-.005	1.937	9	1.539	.039	.039	.0071	.0032	.809	69,759	23,401	2.1875	2.1863
1 1/2	1.500	-.0005	GEWZ38ES	-2RS	2.4375	-.0006	2.250	-.010	1.125	-.005	2.155	9	1.705	.039	.039	.0071	.0032	1.13	84,376	28,127	2.4375	2.4363
1 3/4	1.750	-.0005	GEWZ44ES	-2RS	2.8125	-.0006	2.625	-.010	1.312	-.005	2.515	9	1.965	.039	.039	.0071	.0032	1.78	114,755	38,253	2.8125	2.8113
2	2.000	-.0005	GEWZ50ES	-2RS	3.1875	-.0006	3.000	-.010	1.500	-.005	2.875	9	2.224	.039	.039	.0071	.0032	2.62	150,757	50,406	3.1875	3.1861
2 1/4	2.250	-.0006	GEWZ57ES	-2RS	3.5625	-.0008	3.375	-.010	1.687	-.005	3.235	9	2.484	.039	.039	.0079	.0039	3.67	191,251	63,005	3.5625	3.5611
2 1/2	2.500	-.0006	GEWZ63ES	-2RS	3.9375	-.0008	3.750	-.010	1.875	-.005	3.590	9	2.740	.039	.039	.0079	.0039	4.98	234,009	77,624	3.9375	3.9361
2 3/4	2.750	-.0006	GEWZ69ES	-2RS	4.3750	-.0008	4.125	-.010	2.062	-.005	3.950	9	3.000	.039	.039	.0079	.0039	6.83	285,759	95,623	4.3750	4.3736
3	3.000	-.0006	GEWZ76ES	-2RS	4.7500	-.0008	4.500	-.010	2.250	-.005	4.312	9	3.260	.039	.039	.0079	.0039	8.77	337,508	112,502	4.7500	4.7484
3 1/4	3.250	-.0008	GEWZ82ES	-2RS	5.1250	-.0010	4.875	-.010	2.437	-.005	4.675	9	3.520	.039	.039	.0091	.0051	11.07	396,006	131,629	5.1250	5.1234
3 1/2	3.500	-.0008	GEWZ88ES	-2RS	5.5000	-.0010	5.250	-.010	2.625	-.005	5.040	9	3.776	.039	.039	.0091	.0051	13.76	459,005	153,007	5.5000	5.4984
3 3/4	3.750	-.0008	GEWZ95ES	-2RS	5.8750	-.0010	5.625	-.010	2.812	-.005	5.390	9	4.035	.039	.039	.0091	.0051	16.75	531,009	175,501	5.8750	5.8734
4	4.000	-.0008	GEWZ101ES	-2RS	6.2500	-.0010	6.000	-.010	3.000	-.005	5.750	9	4.331	.059	.039	.0091	.0051	20.08	596,255	202,507	6.2500	6.2484
4 1/2	4.500	-.0008	GEWZ114ES	-2RS	7.0000	-.0010	6.750	-.010	3.375	-.005	6.475	7	4.941	.079	.039	.0091	.0051	28.35	765,008	252,007	7.0000	6.9984
5	5.000	-.0010	GEWZ127ES	-2RS	7.7500	-.0012	7.500	-.010	3.750	-.005	7.190	7	5.453	.079	.039	.0091	.0051	38.53	933,759	315,003	7.7500	7.7482
6	6.000	-.0010	GEWZ152ES	-2RS	8.7500	-.0012	8.250	-.010	4.125	-.005	8.156	7	6.457	.079	.039	.0091	.0051	47.88	1,170,001	389,255	8.7500	8.7482

*Seals may reduce tilt angle



Load Series

ANGULAR CONTACT INCH



GACZ()S

BALL BORE DIAMETER B			PART NUMBER	OUTSIDE DIAMETER D		BALL WIDTH W		RACE WIDTH T		BALL DIA BD	OUTER RING BORE D1	OVERALL HEIGHT H		TILT ANGLE α	SHAFT HSNG FILLET C1 C2	WT APPROX LBS	RADIAL LOADS		AXIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
FRAC	NOM	TOL		NOM	TOL	NOM	TOL	NOM	TOL	REF	REF	NOM	TOL	DEG	MAX	LBS	STATIC LBS	DYN LBS	STATIC LBS	DYN LBS	MAX	MIN
1/2	.500	-.0005	GACZ12S	.8750	-.0005	.270	-.005	.190	-.005	.719	.570	.300	-.025	7.5	.020	.029	3,356	1,125	4,550	1,530	.8750	.8742
5/8	.625	-.0005	GACZ15S	1.0625	-.0005	.340	-.005	.250	-.005	.899	.700	.370	-.025	6.5	.031	.056	5,707	1,901	7,800	2,600	1.0625	1.0617
3/4	.750	-.0005	GACZ19S	1.2500	-.0005	.410	-.005	.310	-.005	1.080	.840	.440	-.025	6.5	.039	.083	8,801	2,905	11,400	3,800	1.2500	1.2490
7/8	.875	-.0005	GACZ22S	1.4375	-.0005	.480	-.005	.380	-.005	1.258	.970	.520	-.025	5.5	.079	.110	12,208	4,053	16,000	5,400	1.4375	1.4365
1	1.000	-.0005	GACZ25S	1.6250	-.0005	.550	-.005	.440	-.005	1.437	1.120	.600	-.025	6.5	.079	.188	16,306	5,406	20,400	6,800	1.6250	1.6240
1 1/4	1.250	-.0005	GACZ31S	2.0000	-.0005	.700	-.005	.550	-.005	1.795	1.390	.740	-.025	6.0	.079	.351	24,507	8,301	30,500	10,200	2.0000	1.9988
1 3/8	1.375	-.0005	GACZ34S	2.1875	-.0006	.770	-.005	.600	-.005	1.937	1.480	.840	-.025	4.0	.098	.470	27,503	9,156	36,500	12,200	2.1875	2.1863
1 1/2	1.500	-.0005	GACZ38S	2.4375	-.0006	.840	-.005	.660	-.005	2.155	1.660	.910	-.025	5.5	.098	.662	34,007	11,408	44,000	14,600	2.4375	2.4363
1 3/4	1.750	-.0005	GACZ44S	2.8125	-.0006	.980	-.005	.790	-.005	2.515	1.950	1.070	-.025	6.0	.098	1.01	47,505	16,009	60,000	20,000	2.8125	2.8113
2	2.000	-.0005	GACZ50S	3.1875	-.0006	1.130	-.005	.920	-.005	2.875	2.220	1.230	-.025	5.5	.142	1.48	64,004	21,205	78,000	26,500	3.1875	3.1861
2 1/4	2.250	-.0006	GACZ57S	3.5625	-.0008	1.270	-.005	1.050	-.005	3.235	2.500	1.390	-.025	5.5	.142	2.09	81,002	27,003	100,000	33,500	3.5625	3.5611
2 1/2	2.500	-.0006	GACZ63S	3.9375	-.0008	1.420	-.005	1.180	-.005	3.590	2.750	1.540	-.025	5.0	.142	2.49	102,009	34,009	127,000	42,500	3.9375	3.9361
2 3/4	2.750	-.0006	GACZ69S	4.3750	-.0008	1.560	-.005	1.275	-.005	3.950	3.030	1.700	-.025	5.0	.181	3.86	120,006	40,006	153,000	51,000	4.3750	4.3736
3	3.000	-.0006	GACZ76S	4.7500	-.0008	1.710	-.005	1.405	-.005	4.312	3.300	1.860	-.025	5.0	.181	5.02	150,001	50,009	190,000	63,000	4.7500	4.7484
3 1/4	3.250	-.0008	GACZ82S	5.1250	-.0010	1.860	-.005	1.545	-.005	4.675	3.580	2.030	-.025	5.0	.181	6.36	180,006	60,001	224,000	73,500	5.1250	5.1234
3 1/2	3.500	-.0008	GACZ88S	5.5000	-.0010	2.000	-.005	1.675	-.005	5.040	3.850	2.180	-.025	5.0	.181	7.87	208,009	69,507	260,000	86,500	5.5000	5.4984
3 3/4	3.750	-.0008	GACZ95S	5.8750	-.0010	2.150	-.005	1.805	-.005	5.390	4.100	2.340	-.025	4.5	.181	9.59	240,007	80,006	300,000	100,000	5.8750	5.8734
4	4.000	-.0008	GACZ101S	6.2500	-.0010	2.300	-.005	1.935	-.005	5.750	4.370	2.500	-.025	4.5	.181	11.60	275,001	93,007	345,000	114,000	6.2500	6.2484
4 1/2	4.500	-.0008	GACZ114S	7.0000	-.0010	2.590	-.005	2.195	-.005	6.475	4.900	2.800	-.025	4.5	.181	17.10	355,007	118,005	440,000	150,000	7.0000	6.9984
5	5.000	-.0010	GACZ127S	7.7500	-.0012	2.880	-.005	2.455	-.005	7.190	5.470	3.130	-.025	4.5	.181	24.40	440,009	146,009	540,000	180,000	7.7500	7.7482
6	6.000	-.0010	GACZ152S	8.7500	-.0012	3.100	-.005	2.615	-.005	8.156	6.500	3.375	-.025	4.5	.181	38.30	540,001	180,006	600,000	200,000	8.7500	8.7482

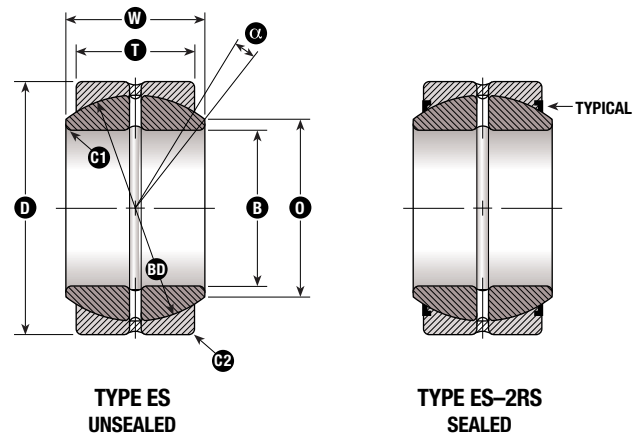


Load Series

UNSEALED AND SEALED

STANDARD DUTY METRIC

GE()E
 GE()ES
 GE()ES-2RS



BALL BORE DIAMETER B		PART NUMBER		OUTSIDE DIA INCH D		BALL WIDTH W		RACE WIDTH T		BALL DIA BD	*TILT ANGLE Cα	SHLDR DIA O	SHAFT FILLET C1	HSNG FILLET C2	RADIAL CLEARANCE NOT MOUNTED μm		WT APPROX LBS	RADIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
NOM MM	TOL	WITHOUT SEALS	WITH SEALS ADD-2RS	NOM	TOL	NOM	TOL	NOM	TOL	REF	DEG	REF	MAX	MAX	MAX	MIN		STATIC LBS	DYN LBS	MAX	MIN
4	-.008	GE4E	-	12	-.008	5	-.120	3	-.240	8	16	5.5	.3	.3	68	32	.007	2,296	458	12.000	11.982
5	-.008	GE5E	-	14	-.008	6	-.120	4	-.240	10	13	6.6	.3	.3	68	32	.009	3,826	766	14.000	13.982
6	-.008	GE6E	-	14	-.008	6	-.120	4	-.240	10	13	7.5	.3	.3	68	32	.009	3,824	767	14.000	13.982
8	-.008	GE8E	-	16	-.008	8	-.120	5	-.240	13	15	9.6	.3	.3	68	32	.018	9,189	1,239	16.000	15.982
10	-.008	GE10E	-	19	-.009	9	-.120	6	-.240	16	12	11.7	.3	.3	68	32	.026	9,115	1,835	19.000	18.979
12	-.008	GE12E	-	22	-.009	10	-.120	7	-.240	18	10	13.8	.3	.3	68	32	.037	12,156	2,431	22.000	21.979
15	-.008	GE15ES	-2RS	26	-.009	12	-.120	9	-.240	22	8	16.9	.3	.3	82	40	.071	19,128	3,829	26.000	25.979
17	-.008	GE17ES	-2RS	30	-.009	14	-.120	10	-.240	25	10	19.0	.3	.3	82	40	.110	23,852	4,773	30.000	29.979
20	-.010	GE20ES	-2RS	35	-.011	16	-.120	12	-.240	29	9	22.1	.3	.3	82	40	.143	32,857	6,759	35.000	34.975
25	-.010	GE25ES	-2RS	42	-.011	20	-.120	16	-.240	35.5	7	28.2	.6	.6	100	50	.265	54,003	10,804	42.000	41.975
30	-.010	GE30ES	-2RS	47	-.011	22	-.120	18	-.240	40.7	6	33.3	.6	.6	100	50	.353	69,751	13,951	47.000	46.975
35	-.012	GE35ES	-2RS	55	-.013	25	-.120	20	-.300	47	6	38.5	.6	1.0	100	50	.507	90,008	18,009	55.000	54.970
40	-.012	GE40ES	-2RS	62	-.013	28	-.120	22	-.300	53	7	43.6	.6	1.0	120	60	.706	112,507	22,501	62.000	61.970
45	-.012	GE45ES	-2RS	68	-.013	32	-.120	25	-.300	60	7	49.4	.6	1.0	120	60	1.01	144,009	28,578	68.000	67.970
50	-.012	GE50ES	-2RS	75	-.013	35	-.120	28	-.300	66	6	54.6	.6	1.0	120	60	1.23	175,509	35,109	75.000	74.970
60	-.015	GE60ES	-2RS	90	-.015	44	-.150	36	-.400	80	6	66.4	1.0	1.0	120	60	2.43	274,509	55,128	90.000	89.965
70	-.015	GE70ES	-2RS	105	-.015	49	-.150	40	-.400	92	6	76.7	1.0	1.0	142	72	3.42	351,007	70,876	105.000	104.965
80	-.015	GE80ES	-2RS	120	-.015	55	-.150	45	-.400	105	6	87.1	1.0	1.0	142	72	5.07	450,005	90,008	120.000	119.965
90	-.020	GE90ES	-2RS	130	-.018	60	-.200	50	-.500	115	5	97.4	1.0	1.0	142	72	6.06	551,257	110,254	130.000	129.960
100	-.020	GE100ES	-2RS	150	-.018	70	-.200	55	-.500	130	7	107.8	1.0	1.0	165	85	9.70	686,257	137,259	150.000	149.960
110	-.020	GE110ES	-2RS	160	-.025	70	-.200	55	-.500	140	6	118.0	1.0	1.0	165	85	10.58	731,259	147,379	160.000	159.960
120	-.020	GE120ES	-2RS	180	-.025	85	-.200	70	-.500	160	6	129.5	1.0	1.0	165	85	18.19	1,068,756	213,753	180.000	179.960
140	-.025	GE140ES	-2RS	210	-.030	90	-.250	70	-.600	180	7	149.0	1.0	1.0	165	85	24.26	1,215,008	243,008	210.000	209.954
160	-.025	GE160ES	-2RS	230	-.030	105	-.250	80	-.600	200	8	169.5	1.0	1.0	192	100	30.87	1,530,009	308,256	230.000	229.954
180	-.025	GE180ES	-2RS	260	-.035	105	-.250	80	-.700	225	6	191.0	1.0	1.0	192	100	40.79	1,721,256	344,251	260.000	259.948
200	-.030	GE200ES	-2RS	290	-.035	130	-.300	100	-.700	250	7	212.5	1.0	1.0	192	100	61.74	2,385,004	477,008	290.000	289.948
220	-.030	GE220ES	-2RS	320	-.040	135	-.300	100	-.800	275	-	232.5	1.0	1.0	214	110	78.28	2,610,005	522,008	320.000	319.943

Type E suffix only denotes no lubrication groove or oil holes
 All dimensions are metric
 *Seals may reduce tilt angle



Load Series

STANDARD DUTY METRIC

NUMERICAL INTERCHANGE

To interchange other metric series, this table can be used in conjunction with the General Series Interchange table on page 1.

This table provides numeric bore size conversion between manufacturers.

METRIC UNSEALED

NATIONAL	R.B.C.	S K F	TORRINGTON	ELGES	I K O
GE4E	-	GE4E	-	-	GE4E
GE5E	-	GE5E	-	-	GE5E
GE6E	-	GE6E	-	GE6DO	GE6E
GE8E	-	GE8E	-	GE8DO	GE8E
GE10E	-	GE10E	-	GE10DO	GE10E
GE12E	MB12	GE12E	12FS22	GE12DO	GE12E
GE15ES	MB15	GE15ES	15FS26	GE15DO	GE15ES
GE17ES	MB17	GE17ES	17FS30	GE17DO	GE17ES
GE20ES	MB20	GE20ES	20FS35	GE20DO	GE20ES
GE25ES	MB25	GE25ES	25FS42	GE25DO	GE25ES
GE30ES	MB30	GE30ES	30FS47	GE30DO	GE30ES
GE35ES	MB35	GE35ES	35FS55	GE35DO	GE35ES
GE40ES	MB40	GE40ES	40FS62	GE40DO	GE40ES
GE45ES	MB45	GE45ES	45FS68	GE45DO	GE45ES
GE50ES	MB50	GE50ES	50FS75	GE50DO	GE50ES
GE60ES	MB60	GE60ES	60FS75	GE60DO	GE60ES
GE70ES	MB70	GE70ES	70FS105	GE70DO	GE70ES
GE80ES	MB80	GE80ES	80FS120	GE80DO	GE80ES
GE90ES	MB90	GE90ES	90FS130	GE90DO	GE90ES
GE100ES	MB100	GE100ES	100FS150	GE100DO	GE100ES
GE110ES	MB110	GE110ES	110FS160	GE110DO	GE110ES
GE120ES	MB120	GE120ES	120FS180	GE120DO	GE120ES
GE140ES	MB140	GE140ES	140FS210	GE140DO	GE140ES
GE160ES	MB160-9L	GE160ES	160FS230	GE160DO	GE160ES
GE180ES	MB180-9L	GE180ES	180FS260	GE180DO	GE180ES
GE200ES	MB200-9L	GE200ES	200FS290	GE200DO	GE200ES
GE220ES	MB220-9L	GE220ES	220FS320	-	GE220ES
GE240ES	MB240-9L	GE240ES	240FS340	-	GE240ES
GE260ES	MB260-9L	GE260ES	260FS370	-	GE260ES
GE280ES	MB280-9L	GE280ES	280FS400	-	GE280ES
GE300ES	MB300-9L	GE300ES	300FS430	-	GE300ES

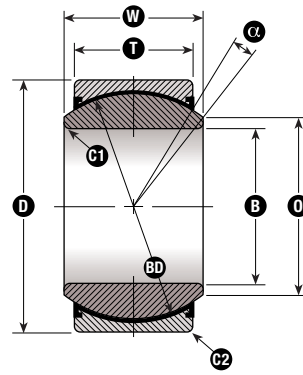
METRIC SEALED

NATIONAL	R.B.C.	S K F	TORRINGTON	ELGES	I K O
GE15ES-2RS	-	GE15ES-2RS	15S26-TT	-	GE15ES-2RS
GE17ES-2RS	MB17-SS	GE17ES-2RS	17FS30-TT	GE17DO-2RS	GE17ES-2RS
GE20ES-2RS	MB20-SS	GE20ES-2RS	20FS35-TT	GE20DO-2RS	GE120ES-2RS
GE25ES-2RS	MB25-SS	GE25ES-2RS	25FS42-TT	GE25DO-2RS	GE25ES-2RS
GE30ES-2RS	MB30-SS	GE30ES-2RS	30FS47-TT	GE30DO-2RS	GE30ES-2RS
GE35ES-2RS	MB35-SS	GE35ES-2RS	35FS55-TT	GE35DO-2RS	GE35ES-2RS
GE40ES-2RS	MB40-SS	GE40ES-2RS	40FS62-TT	GE40DO-2RS	GE40ES-2RS
GE45ES-2RS	MB45-SS	GE45ES-2RS	45FS68-TT	GE45DO-2RS	GE45ES-2RS
GE50ES-2RS	MB50-SS	GE50ES-2RS	50FS75-TT	GE50DO-2RS	GE50ES-2RS
GE60ES-2RS	MB60-SS	GE60ES-2RS	60FS90-TT	GE60DO-2RS	GE60ES-2RS
GE70ES-2RS	MB70-SS	GE70ES-2RS	70FS105-SS	GE70DO-2RS	GE70ES-2RS
GE80ES-2RS	MB80-SS	GE80ES-2RS	80FS120-SS	GE80DO-2RS	GE80ES-2RS
GE90ES-2RS	MB90-SS	GE90ES-2RS	90FS130-SS	GE90DO-2RS	GE90ES-2RS
GE100ES-2RS	MB100-SS	GE100ES-2RS	100FS150-SS	GE100DO-2RS	GE100ES-2RS
GE110ES-2RS	MB110-SS	GE110ES-2RS	110FS160-SS	GE110DO-2RS	GE110ES-2RS
GE120ES-2RS	MB120-SS	GE120ES-2RS	120FS180-SS	GE120DO-2RS	GE120ES-2RS
GE140ES-2RS	MB140-SS	GE140ES-2RS	140FS210-SS	GE140DO-2RS	GE140ES-2RS
GE160ES-2RS	MB160-9LSS	GE160ES-2RS	160FS230-SS	GE160DO-2RS	GE160ES-2RS
GE180ES-2RS	MB180-9LSS	GE180ES-2RS	180FS260-SS	GE180DO-2RS	GE180ES-2RS
GE200ES-2RS	MB200-9LSS	GE200ES-2RS	200FS290-SS	GE200DO-2RS	GE200ES-2RS
GE220ES-2RS	MB220-9LSS	GE220ES-2RS	220FS320-SS	GE220DO-2RS	GE220ES-2RS
GE240ES-2RS	MB240-9LSS	GE240ES-2RS	240FS340-SS	GE240DO-2RS	GE240ES-2RS
GE260ES-2RS	MB260-9LSS	GE260ES-2RS	260FS370-SS	GE260DO-2RS	GE260ES-2RS
GE280ES-2RS	MB280-9LSS	GE280ES-2RS	280FS400-SS	GE280DO-2RS	GE280ES-2RS
GE300ES-2RS	MB300-9LSS	GE300ES-2RS	300FS430-SS	GE300DO-2RS	GE300ES-2RS

These interchange tables show approximate equivalency. All manufacturers bearings may not be functionally or dimensionally interchangeable.



Load Series
SEALED
SELF LUBRICATING METRIC



TYPE ET-2RS
SEALED

GE()ET-2RS

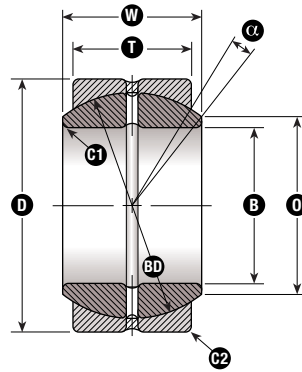
BALL BORE DIAMETER B		PART NUMBER WITH SEALS	OUTSIDE DIA INCH D		BALL WIDTH W		RACE WIDTH T		BALL DIA BD REF	TILT ANGLE C DEG	SHLDR DIA O REF	SHAFT FILLET C1 MAX	HSGR FILLET C2 MAX	RADIAL CLEARANCE NOT MOUNTED µm		WT APPROX LBS	RADIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
NOM MM	TOL		NOM	TOL	NOM	TOL	NOM	TOL						MAX	MIN		STATIC LBS	DYN LBS	MAX	MIN
35	-.012	GE35ET-2RS	55	-.013	25	-.120	20	-.300	47	6	37.9	.6	1.0	30	-	.507	50,500	25,250	55.000	54.970
40	-.012	GE40ET-2RS	62	-.013	28	-.120	22	-.300	53	6	43.0	.6	1.0	30	-	.706	63,050	31,550	62.000	61.970
45	-.012	GE45ET-2RS	68	-.013	32	-.120	25	-.300	60	7	48.8	.6	1.0	30	-	1.01	81,050	40,550	68.000	67.970
50	-.012	GE50ET-2RS	75	-.013	35	-.120	28	-.300	66	6	53.9	.6	1.0	35	-	1.23	99,050	49,550	75.000	74.970
60	-.015	GE60ET-2RS	90	-.015	44	-.150	36	-.400	80	6	65.5	1.0	1.0	35	-	2.43	156,400	77,675	90.000	89.965
70	-.015	GE70ET-2RS	105	-.015	49	-.150	40	-.400	92	6	75.6	1.0	1.0	35	-	3.42	198,050	99,050	105.000	104.965
80	-.015	GE80ET-2RS	120	-.015	55	-.150	45	-.400	105	5	85.9	1.0	1.0	35	-	5.07	256,550	128,300	120.000	119.965
90	-.020	GE90ET-2RS	130	-.018	60	-.200	50	-.500	115	5	96.0	1.0	1.0	40	-	6.06	308,300	156,400	130.000	129.960
100	-.020	GE100ET-2RS	150	-.018	70	-.200	55	-.500	130	6	106.4	1.0	1.0	165	85	9.70	389,300	194,675	150.000	149.960
110	-.020	GE110ET-2RS	160	-.025	70	-.200	55	-.500	140	6	116.5	1.0	1.0	165	85	10.58	418,550	209,300	160.000	159.960
120	-.020	GE120ET-2RS	180	-.025	85	-.200	70	-.500	160	6	127.5	1.0	1.0	165	85	18.19	607,550	301,550	180.000	179.960
140	-.025	GE140ET-2RS	210	-.030	90	-.250	70	-.600	180	7	147.0	1.0	1.0	165	85	24.26	675,100	337,550	210.000	209.954
160	-.025	GE160ET-2RS	230	-.030	105	-.250	80	-.600	200	8	167.5	1.0	1.0	192	100	30.87	856,000	434,300	230.000	229.954
180	-.025	GE180ET-2RS	260	-.035	105	-.250	80	-.700	225	6	189.0	1.0	1.0	192	100	40.79	968,000	486,100	260.000	259.948
200	-.030	GE200ET-2RS	290	-.035	130	-.300	100	-.700	250	7	209.5	1.0	1.0	192	100	61.74	1,350,100	675,050	290.000	289.948
220	-.030	GE220ET-2RS	320	-.040	135	-.300	100	-.800	275	8	229.5	1.0	1.0	214	110	78.28	1,473,800	753,800	320.000	319.943
240	-.030	GE240ET-2RS	340	-.040	140	-.300	100	-.800	300	8	249.5	1.0	1.0	214	110	88.20	1,620,500	810,100	340.000	339.943
260	-.035	GE260ET-2RS	370	-.040	150	-.350	110	-.800	325	7	270.0	1.0	1.0	239	125	114	1,946,300	967,550	370.000	369.943
280	-.035	GE280ET-2RS	400	-.040	155	-.350	120	-.800	350	6	290.5	1.0	1.0	239	125	143	2,250,200	1,126,000	400.000	399.943
300	-.035	GE300ET-2RS	430	-.045	165	-.350	120	-.900	377	7	310.5	1.0	1.0	239	125	173	2,430,100	1,216,000	430.000	429.937

All dimensions are metric

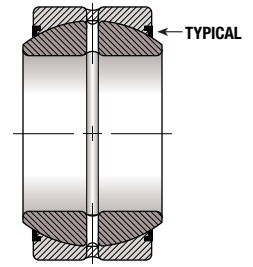


Load Series UNSEALED & SEALED HEAVY DUTY METRIC

GEG()ES
GEG()ES-2RS



TYPE ES
UNSEALED



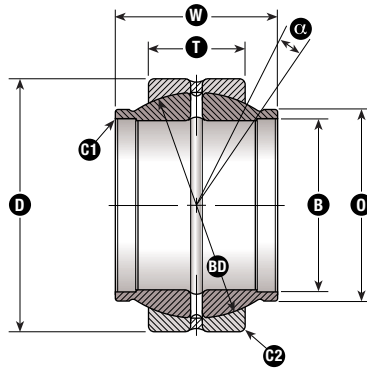
TYPE ES-2RS
SEALED

BALL BORE DIAMETER B		PART NUMBER		OUTSIDE DIA INCH D		BALL WIDTH W		RACE WIDTH T		BALL DIA BD	*TILT ANGLE α	SHLDR DIA O	SHAFT FILLET C1	HSNG FILLET C2	RADIAL CLEARANCE NOT MOUNTED μm		WT APPROX LBS	RADIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
NOM MM	TOL	WITHOUT SEALS	WITH SEALS ADD-2RS	NOM	TOL	NOM	TOL	NOM	TOL	REF	DEG	REF	MAX	MAX	MAX	MIN		STATIC LBS	DYN LBS	MAX	MIN
20	-.010	GEG20ES	-2RS	42	-.011	25	-.120	16	-.240	35.5	17	22.7	.3	.6	100	50	.353	54,001	10,805	42.000	41.975
25	-.010	GEG25ES	-2RS	47	-.011	28	-.120	18	-.240	40.7	17	28.6	.6	.6	100	50	.441	69,752	13,954	47.000	46.975
30	-.010	GEG30ES	-2RS	55	-.013	32	-.120	20	-.300	47	17	33.7	.6	1.0	100	50	.772	90,004	18,008	55.000	54.970
35	-.012	GEG35ES	-2RS	62	-.013	35	-.120	22	-.300	53	16	38.8	.6	1.0	120	60	1.04	112,507	22,504	62.000	61.970
40	-.012	GEG40ES	-2RS	68	-.013	40	-.120	25	-.300	60	17	44.1	.6	1.0	120	60	1.35	144,009	28,576	68.000	67.970
45	-.012	GEG45ES	-2RS	75	-.013	43	-.120	28	-.300	66	15	49.8	.6	1.0	120	60	1.76	175,506	35,108	75.000	74.970
50	-.012	GEG50ES	-2RS	90	-.015	56	-.120	36	-.400	80	17	55.8	.6	1.0	120	60	3.53	274,508	55,129	90.000	89.965
60	-.015	GEG60ES	-2RS	105	-.015	63	-.150	40	-.400	92	17	67.1	1.0	1.0	142	72	5.29	351,007	70,874	105.000	104.965
70	-.015	GEG70ES	-2RS	120	-.015	70	-.150	45	-.400	105	16	77.5	1.0	1.0	142	72	7.50	450,005	90,008	120.000	119.965
80	-.015	GEG80ES	-2RS	130	-.018	75	-.150	50	-.500	115	14	87.8	1.0	1.0	142	72	9.04	551,253	110,254	130.000	129.960
90	-.020	GEG90ES	-2RS	150	-.018	85	-.200	55	-.500	130	15	98.2	1.0	1.0	165	85	13.89	686,254	137,259	150.000	149.960
100	-.020	GEG100ES	-2RS	160	-.025	85	-.200	55	-.500	140	14	108.1	1.0	1.0	165	85	14.99	731,254	147,372	160.000	159.960
110	-.020	GEG110ES	-2RS	180	-.025	100	-.200	70	-.500	160	12	119.5	1.0	1.0	165	85	24.26	1,068,752	213,754	180.000	179.960
120	-.020	GEG120ES	-2RS	210	-.030	115	-.200	70	-.600	180	16	130.0	1.0	1.0	165	85	33.08	1,215,006	243,008	210.000	209.954

All dimensions are metric
*Seals may reduce tilt angle



Load Series
UNSEALED
STANDARD DUTY METRIC
EXTENDED INNER RACE



TYPE ES
UNSEALED

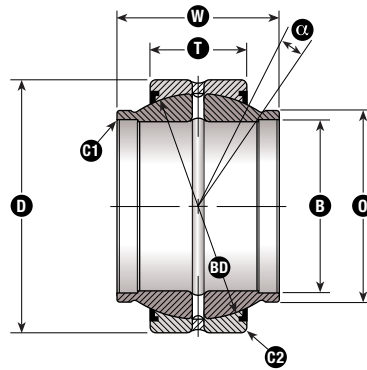
GEEW()ES

BALL BORE DIAMETER B		PART NUMBER	OUTSIDE DIA INCH D		BALL WIDTH W		RACE WIDTH T		BALL DIA BD	TILT ANGLE α	SHLDR DIA O	SHAFT FILLET C1	HSNG FILLET C2	RADIAL CLEARANCE NOT MOUNTED μm		WT APPROX LBS	RADIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
NOM MM	TOL		NOM	TOL	NOM	TOL	NOM	TOL	REF	DEG	REF	MAX	MAX	MAX	MIN	LBS	STATIC LBS	DYN LBS	MAX	MIN
12	+.018	GEEW12ES	22	-.009	12	-.180	7	-.240	18	4	14.5	.3	.3	68	32	.044	12,153	2,431	22.000	21.979
16	+.018	GEEW16ES	28	-.009	16	-.180	9	-.240	23	4	18.7	.3	.3	82	40	.077	19,804	3,965	28.000	27.979
20	+.021	GEEW20ES	35	-.011	20	-.210	12	-.240	29	4	23.1	.3	.3	82	40	.154	32,854	6,754	35.000	34.975
25	+.021	GEEW25ES	42	-.011	25	-.210	16	-.240	35.5	4	29.2	.6	.6	100	50	.287	54,007	10,804	42.000	41.975
32	+.025	GEEW32ES	52	-.013	32	-.250	18	-.300	43	4	36.3	.6	1.0	100	50	.375	73,128	14,735	52.000	51.970
40	+.025	GEEW40ES	62	-.013	40	-.250	22	-.300	53	4	44.8	.6	1.0	120	60	.750	112,507	22,509	62.000	61.970
50	+.025	GEEW50ES	75	-.013	50	-.250	28	-.300	66	4	55.9	.6	1.0	120	60	1.235	175,504	35,104	75.000	74.970
63	+.030	GEEW63ES	95	-.015	63	-.300	36	-.400	83	4	69.7	1.0	1.0	142	72	2.756	285,754	57,374	95.000	94.965
80	+.030	GEEW80ES	120	-.015	80	-.300	45	-.400	105	4	88.7	1.0	1.0	142	72	5.292	450,009	90,005	120.000	119.965
100	+.035	GEEW100ES	150	-.018	100	-.350	55	-.500	130	4	110.1	1.0	1.0	165	85	10.58	686,251	137,254	150.000	149.960
125	+.040	GEEW125ES	180	-.025	125	-.400	70	-.500	160	4	136.5	1.0	1.0	165	85	18.74	1,068,754	213,759	180.000	179.960
160	+.040	GEEW160ES	230	-.030	160	-.400	80	-.600	200	4	172.0	1.0	1.0	192	100	36.38	1,530,008	308,254	230.000	229.954
200	+.046	GEEW200ES	290	-.035	200	-.460	100	-.700	250	4	213.0	1.0	1.0	192	100	70.56	2,385,004	477,009	290.000	289.948

All dimensions are metric



Load Series
SEALED
STANDARD DUTY METRIC
EXTENDED INNER RACE



TYPE ES-2RS
SEALED

GEEM()ES-2RS

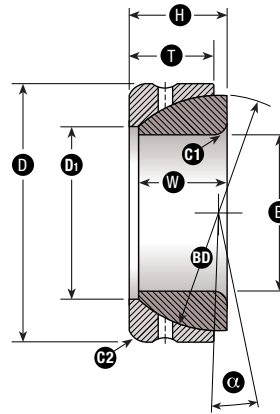
BALL BORE DIAMETER B		PART NUMBER WITH SEALS	OUTSIDE DIA INCH D		BALL WIDTH W		RACE WIDTH T		BALL DIA BD	TLT ANGLE α	SHLDR DIA O	SHAFT FILLET C1	HSG FILLET C2	RADIAL CLEARANCE NOT MOUNTED μm		WT APPROX LBS	RADIAL LOADS		HOUSING BORE FIT (TIGHT) M7	
NOM MM	TOL		NOM	TOL	NOM	TOL	NOM	TOL	REF	DEG	REF	MAX	MAX	MAX	MIN	STATIC LBS	DYN LBS	MAX	MIN	
20	-.010	GEEM20ES-2RS	35	-.011	24	-.120	12	-.240	29	6	23.0	3	.3	82	40	.161	32,851	6,752	35.000	34.975
25	-.010	GEEM25ES-2RS	42	-.011	29	-.120	16	-.240	35.5	4	28.3	.3	.6	100	50	.287	54,006	10,806	42.000	41.975
30	-.010	GEEM30ES-2RS	47	-.011	30	-.120	18	-.240	40.7	4	33.5	.3	.6	100	50	.375	69,752	13,957	47.000	46.975
35	-.012	GEEM35ES-2RS	55	-.013	35	-.120	20	-.300	47	4	38.8	.6	1.0	100	50	.551	90,004	18,009	55.000	54.970
40	-.012	GEEM40ES-2RS	62	-.013	38	-.120	22	-.300	53	4	44.0	.6	1.0	120	60	.772	112,507	22,509	62.000	61.970
45	-.012	GEEM45ES-2RS	68	-.013	40	-.120	25	-.300	60	4	49.6	.6	1.0	120	60	1.08	144,009	28,573	68.000	67.970
50	-.012	GEEM50ES-2RS	75	-.013	43	-.120	28	-.300	66	4	54.8	.6	1.0	120	60	1.32	175,503	35,109	75.000	74.970
60	-.015	GEEM60ES-2RS	90	-.015	54	-.150	36	-.400	80	3	65.4	.6	1.0	120	60	2.54	274,508	55,127	90.000	89.965
70	-.015	GEEM70ES-2RS	105	-.015	65	-.150	40	-.400	92	4	75.7	.6	1.0	142	72	3.64	351,009	70,873	105.000	104.965
80	-.015	GEEM80ES-2RS	120	-.015	74	-.150	45	-.400	105	4	86.1	.6	1.0	142	72	5.51	450,004	90,007	120.000	119.965

All dimensions are metric



Load Series

ANGULAR CONTACT METRIC



GAC()S

BALL BORE DIAMETER B		PART NUMBER	OUTSIDE DIA INCH D		BALL WIDTH W		RACE WIDTH T		BALL DIA D1	OUTER RING BORE D2	OVERALL HEIGHT H		TILT ANGLE α	SHAFT HSNG FILLET C1 C2		WT APPROX	RADIAL LOADS		AXIAL LOADS		HOUSING BORE FIT (PRESS FIT) N7	
NOM MM	TOL		NOM	TOL	NOM	TOL	NOM	TOL	REF	REF	NOM	TOL	DEG	MIN	LBS	STATIC LBS	DYN LBS	STATIC LBS	DYN LBS	MAX	MIN	
25	-0.012	GAC25S	47	-0.014	14	-0.200	14	-0.200	41	27	15	+/-0.250	3.5	0.3	.315	51,709	9,892	60,701	12,140	46.992	46.976	
30	-0.012	GAC30S	55	-0.016	16	-0.200	16	-0.200	48	31	17	+/-0.250	3	0.5	.472	69,694	13,489	87,679	17,535	54.991	54.961	
35	-0.012	GAC35S	62	-0.016	17	-0.240	17	-0.240	55	39	18	+/-0.250	3	0.5	.607	85,432	16,636	96,672	19,334	61.991	61.961	
40	-0.012	GAC40S	68	-0.016	18	-0.240	18	-0.240	60	45	19	+/-0.250	3	0.5	.742	98,921	19,344	101,169	20,233	67.991	67.961	
45	-0.012	GAC45S	75	-0.016	19	-0.240	19	-0.240	67	52	20	+/-0.250	3	0.5	.921	116,906	22,931	114,658	22,931	74.991	74.961	
50	-0.012	GAC50S	80	-0.016	19	-0.240	19	-0.240	74	57	20	+/-0.250	3	0.5	1.012	128,147	25,629	143,884	28,776	79.991	79.961	
55	-0.015	GAC55S	90	-0.018	22	-0.300	22	-0.300	81	62	23	+/-0.250	3	0.8	1.506	164,118	32,823	175,359	35,071	89.990	89.955	
60	-0.015	GAC60S	95	-0.018	22	-0.300	22	-0.300	86	66	23	+/-0.250	3	0.8	1.619	175,344	34,622	195,593	39,118	94.990	94.955	
65	-0.015	GAC65S	100	-0.018	22	-0.300	22	-0.300	94	76	23	+/-0.250	2.5	0.8	1.709	191,097	37,770	197,841	39,568	99.990	99.955	
70	-0.015	GAC70S	110	-0.018	24	-0.300	24	-0.300	102	80	25	+/-0.250	2.5	0.8	2.248	227,250	44,964	258,543	51,708	109.990	109.955	
80	-0.015	GAC80S	125	-0.020	27	-0.300	27	-0.300	117	90	29	+/-0.250	2.5	0.8	3.372	283,273	56,205	359,712	71,942	124.998	124.948	
90	-0.020	GAC90S	140	-0.020	30	-0.400	30	-0.400	134	105	32	+/-0.250	2.5	0.8	4.721	361,960	72,392	447,391	89,478	139.998	139.948	
100	-0.020	GAC100S	150	-0.020	30	-0.400	30	-0.400	143	115	32	+/-0.250	2	0.8	5.171	386,690	77,338	465,377	93,075	149.998	149.948	
110	-0.020	GAC110S	170	-0.025	36	-0.400	36	-0.400	160	123	38	+/-0.250	2	1.0	8.318	526,079	104,766	676,708	135,341	169.998	169.948	
120	-0.020	GAC120S	180	-0.025	36	-0.400	36	-0.400	170	132	38	+/-0.250	2	1.0	8.768	559,801	111,510	739,657	147,931	179.998	179.948	
130	-0.025	GAC130S	200	-0.030	42	-0.500	42	-0.500	187	139	45	+/-0.350	1	1.0	13.489	705,934	140,737	1,009,442	201,888	199.998	199.940	
140	-0.025	GAC140S	210	-0.030	42	-0.500	42	-0.500	200	156	45	+/-0.350	1	1.0	14.388	753,147	150,629	1,011,690	202,338	209.986	209.940	
150	-0.025	GAC150S	225	-0.030	45	-0.500	45	-0.500	206	158	48	+/-0.350	1	1.2	17.536	836,330	167,266	1,128,596	225,719	224.986	224.940	
160	-0.025	GAC160S	240	-0.030	48	-0.500	48	-0.500	225	177	51	+/-0.350	1	1.2	21.133	977,967	195,593	1,245,503	249,100	239.986	239.940	
170	-0.025	GAC170S	260	-0.035	54	-0.500	54	-0.500	234	179	57	+/-0.350	1	1.2	28.552	1,153,326	230,665	1,465,826	293,165	259.986	259.934	
180	-0.025	GAC180S	280	-0.035	61	-0.500	61	-0.500	260	201	64	+/-0.350	1	1.2	37.995	1,456,830	291,366	1,755,844	351,168	279.986	279.934	

All dimensions are metric



Load Series ENGINEERING

Please contact National Precision Bearing engineering personnel to discuss specifications, applications, loading, shaft or housing design, lubrication, installation or Load Series design types.

Load Series Bearings

Most Load Series spherical bearings are the single fracture type, though a few of the larger sizes require a double fracture. The fracture in the hardened steel outer race is to facilitate inner race or ball installation. Except for the very small sizes and self-lubricating types, most of the bearings have lubrication grooves and oil holes in the inner and outer races. The bearing races are made of heat treated and ground high strength steel. The races are phosphate treated and coated with Molybdenum Disulfide (MoS_2). The Molybdenum Disulfide coating is a dry film lubricant that protects the races from damage during initial movement, however most bearings should be lubricated with grease or oil prior to installation.

Load Series Self-Lubricating Bearings

Bearings of this type do not require grease or oil for lubrication. Instead, they utilize a Teflon® liner system bonded to the inside diameter of the outer race as a lubricant. The inner race or ball is made of heat treated high strength steel which is chrome plated on the outside diameter. The chrome plating provides a hard smooth surface to run against the Teflon® liner system. These bearings are also manufactured with seals to help keep contamination out of the bearing. This type of bearing is excellent in applications where the relative motion is between the outside diameter of the inner race or ball and the inside diameter of the outer race. These bearings are particularly well suited when the loading is in one direction. One direction loading prevents grease or oil from flowing to the load zone of the bearing, while the Teflon® liner system provides uniform lubrication in the load zone. For more information on these types of bearings, please contact National Precision Bearing.

Tolerances

All tolerances in this catalog are before the outer races are fractured and before application of dry film lubricant.

Materials

Bearing races are made of GRC15/52100 steel and are heat treated for optimum wear resistance. The races are phosphate coated for corrosion protection and the sliding surfaces are MoS_2 coated. This does not apply to self-lubricating bearings.

Load Series Operating Temperature Range

Unsealed	-75 F to +400 F
Sealed	-10 F to +250 F
Self Lubricating	
Sealed	-10 F to +250 F

Ultimate Loads

Ultimate loads for the bearings in this catalog are approximately 1.5 times the catalog load ratings.

Teflon® is a registered trademark of Dupont.

Fraction/Inch/Metric CONVERSION TABLE

Fraction	Inch	mm
1/64	0.0156	0.3969
	0.0250	0.6350
1/32	0.0312	0.7937
	0.0394	1.0000
	0.0400	1.0160
3/64	0.0469	1.1906
	0.0472	1.2000
	0.0550	1.3970
	0.0591	1.5000
1/16	0.0625	1.5875
	0.0709	1.8000
5/64	0.0781	1.9844
	0.0787	2.0000
	0.0906	2.3012
3/32	0.0937	2.3812
	0.0984	2.5000
	0.1000	2.5400
	0.1024	2.6000
7/64	0.1094	2.7781
	0.1100	2.7940
	0.1102	2.8000
	0.1181	3.0000
1/8	0.1250	3.1750
	0.1256	3.1902
	0.1378	3.5000
9/64	0.1406	3.5719
5/32	0.1562	3.9687
	0.1575	4.0000
11/64	0.1719	4.3656
3/16	0.1875	4.7625
	0.1892	4.8057
	0.1969	5.0000
13/64	0.2031	5.1594
	0.2165	5.4991
7/32	0.2187	5.5562
15/64	0.2344	5.9531
	0.2362	6.0000
1/4	0.2500	6.3500
17/64	0.2656	6.7469
	0.2756	7.0000
9/32	0.2812	7.1437

Fraction	Inch	mm
	0.2883	7.3228
19/64	0.2969	7.5406
5/16	0.3125	7.9375
	0.3150	8.0000
21/64	0.3281	8.3344
11/32	0.3437	8.7312
	0.3543	9.0000
23/64	0.3594	9.1281
3/8	0.3750	9.5250
25/64	0.3906	9.9213
	0.3937	10.0000
13/32	0.4062	10.3187
	0.4100	10.4140
27/64	0.4219	10.7156
	0.4250	10.7950
	0.4331	11.0000
7/16	0.4375	11.1125
29/64	0.4531	11.5094
	0.4600	11.6840
15/32	0.4687	11.9062
	0.4724	12.0000
31/64	0.4844	12.3031
1/2	0.5000	12.7000
	0.5118	13.0000
33/64	0.5156	13.0968
17/32	0.5312	13.4937
35/64	0.5469	13.8906
	0.5512	14.0000
9/16	0.5625	14.2875
37/64	0.5781	14.6844
	0.5906	15.0000
19/32	0.5937	15.0812
39/64	0.6094	15.4781
5/8	0.6250	15.8750
	0.6299	16.0000
41/64	0.6406	16.2719
	0.6500	16.5100
21/32	0.6562	16.6687
	0.6620	16.8148
	0.6693	17.0000
43/64	0.6719	17.0656

Fraction	Inch	mm
11/16	0.6875	17.4625
45/64	0.7031	17.8594
	0.7087	18.0000
23/32	0.7187	18.2562
47/64	0.7344	18.6532
	0.7435	18.8849
	0.7480	19.0000
3/4	0.7500	19.0500
49/64	0.7656	19.4469
	0.7717	19.6012
25/32	0.7812	19.8433
	0.7874	20.0000
51/64	0.7969	20.2402
13/16	0.8125	20.6375
	0.8268	21.0000
53/64	0.8281	21.0344
27/32	0.8437	21.4312
55/64	0.8594	21.8281
	0.8661	22.0000
7/8	0.8750	22.2250
57/64	0.8906	22.6219
	0.9055	23.0000
29/32	0.9062	23.0187
59/64	0.9219	23.4156
15/16	0.9375	23.8125
	0.9449	24.0000
61/64	0.9531	24.2094
31/32	0.9687	24.6062
	0.9843	25.0000
63/64	0.9844	25.0031
1	1.0000	25.4000
	1.0236	26.0000
	1.0415	26.4541
	1.0480	26.6192
	1.0630	27.0000
	1.1025	28.0000
	1.1417	29.0000
	1.1812	30.0000
1-1/4	1.2500	31.7500
1-1/2	1.5000	38.1000
	1.5354	39.0000

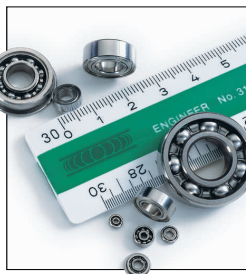
Fraction	Inch	mm
	1.5748	40.0000
	1.6535	42.0000
1-3/4	1.7500	44.4500
	1.7717	45.0000
	1.8898	48.0000
	1.9685	50.0000
2	2.0000	50.8000
	2.0472	52.0000
	2.1654	55.0000
	2.2047	56.0000
2-1/4	2.2500	57.1500
	2.3622	60.0000
2-1/2	2.5000	63.5000
	2.5197	64.0000
2-3/4	2.7500	69.8500
	2.8346	72.0000
	2.9528	75.0000
3	3.0000	76.2000
	3.1496	80.0000
3-1/4	3.2500	82.5500
3-1/2	3.5000	88.9000
	3.5433	90.0000
3-3/4	3.7500	95.2500
	3.9370	100.0000
4	4.0000	101.6000
4-1/4	4.2500	107.9500
	4.3307	110.0000
4-1/2	4.5000	114.3000
	4.7244	120.0000
4-3/4	4.7500	120.6500
5	5.0000	127.0000
	5.1181	130.0000
5-1/4	5.2500	133.3500
5-1/2	5.5000	139.7000
	5.5118	140.0000
5-3/4	5.7500	146.0500
	5.9055	150.0000
6	6.0000	152.4000



National Precision Bearing is a operating group within Mechatronics, Inc. Mechatronics is a corporation located near Seattle Washington. The parent corporation was founded in 1979 to supply bearings to the Seattle based aerospace industry. Currently, in addition to aerospace, we supply products to the medical, dental, electronics, computer, office automation, telecommunication, marine, heavy equipment, industrial and distributor markets. Mechatronics is currently ISO 9002 registered and we are working toward ISO 2000 registration by May 2002.

Other National Precision Bearing Product Lines

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Self Lubricating Bearings



Rod End Bearings



V-Groove Bearings



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